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ComputerWeekly

Thursday, October 20, 1983

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Tandem slams brakes on rivals

by John Riley

TANDEM early this week launched two new NonStop systems to dish the competition which has jumped on the failsafe hardware bandwagon.

Aimed at the very high volume transaction processing market, the new top end NonStop TXP will have two to three times the processing power of the NonStop 2 machine.

The NonStop TXP is a 32-bit multiple processor system. Each CPU can address over one gigabyte of virtual memory, can access 64 bits from the main memory and manipulate 32 bits of data at one time via dual data paths and dual arithmetic logic paths.

Each processor has a 64 Kbytes cache memory to reduce the average memory access time. The CPU cycle time has been reduced to 83.33 nanoseconds by streamlined data paths, and other features including 16 Kbytes static RAM and programmable array logic.

"This launch is strategically important for three reasons," said UK managing director John Louth. "It reduces the cost for online users; it provides modular expandability from other NonStop systems; and it addresses new markets for very high volume transactions.

"Transaction processing is growing at twice the rate of the data processing market in general – and we've always been in that. This is reflected by our continued growth where others have faltered," he added.

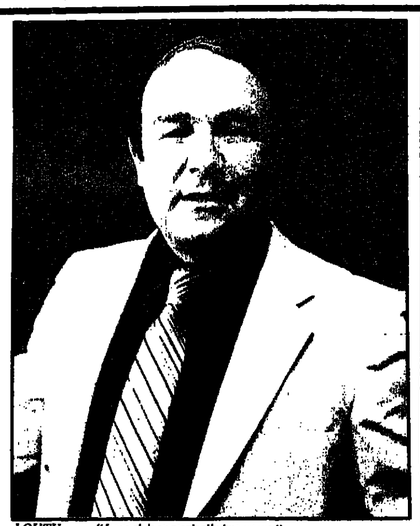
Tandem's shares are currently riding high around the $35 mark.

"The TXP will reinforce Tandem's stronghold in large sectors of the financial marketplace as well as providing new impetus into markets such as the governing sector, and large-scale users in retail, distribution, leisure and transportation," said Tandem sales director Allen Brain.

The first shipment of the NonStop TXP will be November, and the cost for a typical complete system, comprising two processors each with four Mbytes of main memory, two 540 Mbytes disc drives and a communications controller works out at £333,000.

The new entry level system, the NonStop 1+ provides all of the fault tolerant features of the NonStop 2 system, at a price just under £100,000. It is aimed at the volume end user and third party systems builders.

"The NonStop 1+ system meets the demands of the larger users needing smaller peripheral machines," explained Brain. "It addresses the needs of systems builders who traditionally use minicomputers, but who want Tandem's architecture."



LOUTH . . . "Launch is strategically important."

Mercury takes union to high court

by George Black

MERCURY is locked in a High Court test case against the Post Office Engineering Union over action opposing the privatisation of British Telecom. BT's private sector rival brought an injunction against the union to test the legality of its instruction to members not to co-operate with the privatisation plan.

It is the first time the 1980 Employment Act, the so-called Tebbit's Law, has been invoked in major dispute.

Mercury claimed the union's action interfering with its business had lost between £500,000 and £1.5 million. Another £4 million worth of orders was at risk, but the union's non-co-operation was an unlawful secondary action concerned with pay, conditions and jobs. The union argued that its members' job security was at stake.

BT has been bussing workers into central London from the south coast and Home Counties to tackle the jobs of members involved in the action.

BT says about 1,600 people are on strike. The union says 1,400 are locked out, 300 on strike and 300 suspended for non-co-operation.

Reprisals against Mercury workers, BP, Barclay's Bank, Cable and Wireless, have not been dropped.

The 1,600 described as "on strike" or "locked out" are mainly at the Post Office Tower, City of London, London North Central and Westminster branches.

Apple gets Systime to sell Lisa

by John Kavanagh

APPLE has signed up UK systems builder Systime to sell its Lisa business microcomputer to big companies. Systime will sell the machine as a self-contained workstation, and as part of complete systems.

Apple said the agreement added "an important dimension" to its distribution strategy. "Systime is a major supplier to major accounts, so this agreement gives us an entrance to a substantial market," said Apple UK marketing director Dennis O'Connor.

He said Apple was having exploratory talks with "other major distributors".

The deal also adds a new dimension to Systime. So far the company has built its own systems from Intel chips and Digital Equipment processor boards. Now it is taking on a packaged product with standard software.

Systime pointed out that the Lisa could emulate a Digital Equipment VT100 terminal and could therefore be linked to Systime processors.

"We see ourselves selling a Lisa as part of a big system," said marketing director John Gow. "A user might take one or two Lisas for fancy advanced text processing with one of our big machines.

"We saw a need for this product but it was beyond our resources to do all the development."

Gow said he expected to sell at least 300 Lisas a year. He saw no conflict with Systime's Intel-based 8300 small system. "That's a data processing machine," he said.

He added: "Lisa won't blitz the world as the micro has done, because it's unique. But people who use computers will see it as the next step to take."

Systime is setting up a team of half-a-dozen people to deal with Apple and sell the Lisa. It will also be sold through the existing salesforce.

O'Connor said Apple had 70 Lisa distributors in the UK and was aiming at over 100. Sales had picked up after a sluggish summer, just after the product's launch. Worldwide sales were now well over 8,000. Between 200 and 300 had been sold in the UK in the two months since the launch here.

"It's taken our dealers and our own salesforce some time to learn about this product," O'Connor said.

O'CONNOR . . . "Entrance to a substantial market."

Non-IBM personals in peril

by George Black

THE arrival of the mainframe-micro link will push non-IBM personal computers such as the Apple-II out of the big corporations.

This was predicted by Informatics' UK manager Raiyo Shroff at the first public demonstration outside the US of its new product VisiAnswer, jointly developed with Visicorp.

Shroff claimed that a UK clearing bank had told all its staff to standardise on the IBM-PC as from last week and instructed that the accumulated Apple-IIs were to be disposed of in any way possible.

Mainframe links such as VisiAnswer could mean the end of the Apple-II's long run as the world's most successful small computer, he suggested. Visicorp chief executive Dan Fylstra said that Apple-II's main strength was in smaller businesses and the educational sphere to which it would be confined in future.

The two US software companies, which got together 18 months ago to tackle the problem of micro access to mainframe databases, will deliver VisiAnswer next month. They say that the mouse-driven system, which fetches data from the central store and allows micro users to handle it on VisiCalc, will bring computing facilities to non-experts for the first time.

VisiAnswer uses Informatics' Answer/DB to extract the information required from the mainframe, but will not allow uploading from the micro. That could only lead to anarchy, according to Shroff.

Informatics has opted to put the concept only on the IBM-PC.

Atari losses mount up

AS Atari posted large losses for the third quarter running, the firm's British side was quick to reiterate that the problem was "purely an American one".

All the international businesses of Atari outside the US, including Britain, were still in profit and doing well, a spokesman for the company insisted.

But Atari has lost $536 million this year – $46 million in the first quarter, $310 in the second and now $180 million in the third. The main cause has been overstocking of games software in the highly competitive American market.

Further losses are expected in the fourth quarter of 1983 and the first quarter of 1984.

Atari's British outlet says it can still sell more machines than it can get. Software sales are also holding up well.

It denies there is any question about the commitment of the parent, Warner Comunications, to its loss-making computer operation.

Atari's failures more than wiped out Warner's gains from music, films and other entertainment and consumer interests, and left it $122 in the red in the third quarter.

Last year Atari earned $224 million in the first nine months. It was towards the end of 1982 that high inventories of cartridges began to lead it into trouble.

Since then hundreds of employees have been laid off and much of the manufacturing has been shifted to the Far East, in an attempt to achieve the same production efficiency as has kept rival Commodore viable.

Atari spokesmen point to the acquisition of new premises on the US West Coast as evidence that Warner is still firmly behind them.

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IBM updates PC but Peanuts stays in its shell

by George Black

IBM UNVEILED new personal computing products in New York on Tuesday – but not the long-awaited Peanut, which is expected to follow next month.

The new version of the PC announced this week is called the 3270-PC, selling at $5,585, and gives users seven simultaneous windows on its screen.

Four of them handle data from host computer applications, two act as electronic notepads and one is for a personal computing session. The windows can be made larger or smaller at will and the user can move easily from one to another, says IBM. The basic configuration includes a high resolution colour display and a 3270-PC control program.

There is also a new link between the IBM PC/XT, the upmarket model, and the 370 mainframe running under VM/CMS that will enable users to bring down mainframe software to their own desktops.

At the same time IBM has strengthened its distributed processing offerings in the 8100 series with a new machine called the 8150, which is said to have treble the storage capacity of a large 8100 and more than double its speed.

Speculation is meanwhile intensifying around the Peanut, which is generally thought to be a slimmer version of the PC.

The codename Peanut is predicted to be dropped in favour of "PC Junior".

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BT wins major US deal

by Donald Kennett

BRITISH Telecom has pulled off a "coals to Newcastle" deal under which its UK-designed City Business System will be assembled and sold in North America in a joint venture with the major US business communications supplier Centel.

The venture's first success is an order worth £14 million from Wall Street stockbrokers Merrill Lynch to replace the dealers' boards in all its US offices.

The City Business System provides up to 1,000 individual financial dealer consoles, each with two telephones and a touch-screen controlled VDU, from which access can be made to a total of 10,000 telephone lines.

The system can make and hold several calls at once for each dealer position and can retrieve data from in-house or third party computers automatically. It can also be linked to the telex network.

It was launched in June 1982 and Williams & Glyn's Bank was the first customer. This year sales worth more than £5 million have been made in the UK, and the system has also been successful in Hong Kong, Abu Dhabi and Bahrein. British Caledonian Airways uses it to control all its operations at Gatwick airport.

BT chairman Sir George Jefferson said: "We are well ahead of the rest of the world now and we are confident we can compete with any rival systems that come on the market. We have the technical know-how and a successful company which will enable us to put our product quickly and profitably into a prime market."

Telecom designed the system for the City of London financial community when it found no similar system on the market.

JEFFERSON . . . Well ahead.

DEC makes a concession to distributors

by John Kavanagh

UK systems houses have won a "major concession" from US minicomputer giant Digital Equipment which should cut competition between DEC and its official distributors.

DEC's UK managing director, Darryl Barbe, told the 11 computer distributors last week that the company was introducing incentives to get its sales staff to work with distributors to win orders, not against them.

And those distributors will also get commission for orders won by DEC sales people using their applications software resources. The announcement should end a long-running dispute between DEC and its distributors.

At the same time DEC aims to boost sales of its Professional 300 microcomputer by helping the authorised distributors convert their packages to run on the slow-selling machine.

"This is a major concession," said Bernard Conlon, marketing director at Minicomputer Commercial Software. "DEC will now be co-operating with us in areas where there has been conflict."

Barbe unveiled this new deal at the first annual conference of the authorised distributors, at a time when DEC's official outlets were concerned about their supplier's ambitions in the end user market.

For some time they have been complaining about competition from DEC when bidding for contracts. Some had said DEC could lose its distributors to other suppliers if it continued to compete for business.

"DEC has been through a major re-organisation in the last 12 months," said Conlon. "This shows it is starting to wake up again."

Eric Haworth, managing director of Management Control Systems and chairman of the distributors' pressure group, said: "This conference has been a tremendous success, with positive results which will benefit the end user."

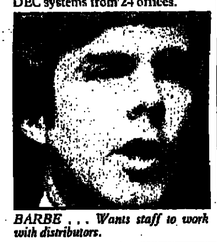
DEC has been urging its distributors to go for specialist markets rather than sell general packages such as accounting systems. But DEC has also said it will eventually include specialist packages in its catalogue of third-party and home-grown software. This issue came up again at the meeting.

"We will all survive because there's such a huge market," Conlon said. "DEC does not have all the expertise needed to cover every specialist market. And many customers buying general packages also want some tailored software, which is work the distributors can do."

As far as converting the distributors' packages from the PDP-11 and Vax minicomputers to the Professional 300 microcomputer is concerned, DEC is offering considerable help.

It is giving free access to equipment and software development tools, free training and help with the production of documentation – and it will put together a brochure of software available from the distributors, at its own expense.

The 11 distributors do £25 million worth of business a year on DEC equipment. Between them they have 700 people working on DEC systems from 24 offices.



BARBE . . . Wants staff to work with distributors.

Amdahl profits soar

PLUG compatible maker Amdahl has posted a spectacular profit rise from $630,000 to $13.7 million for the three months ending September 30. Sales doubled to $200 million with growing volume shipments of the company's two new IBM compatible models, the 58/40 and the 58/60.

Xerox drops shops

US GIANT Xerox is to drop its high street computer shops. The company has signed a letter of intent with a group of US investors for the sale of almost all its 54 stores. Xerox and troubled Victor both launched portable micros last week at the Systems 83 show in Munich. There is no date for a UK launch of the systems.

Technical award

SYSTEMS Designers was last night presented with the British Computer Society's 1983 Technical Award, for its Perspective project control software. This is the first time that a software product has won the award, and according to the BCS, recognises the increasing importance of software engineering.

Profits tumble

PROFITS have tumbled for two major US computer makers, Apple and Prime. Micro maker Apple saw its fourth quarter profits drop by 73% despite a sales jump of 55% – compared to last year's figures. But annual profits jumped 25% to $76.7 million with sales up 69% to $982.8 million. Prime's nine month earnings tumbled 31% to $22.5 million but sales were up 18% to $373.5 million.

Mitsubishi admits it tried to steal secrets

by George Black

MITSUBISHI Electric admitted in a Californian court last Thursday that it had attempted to steal IBM secrets.

Together with two of its employees it was fined a total of $30,000 in the court in San Jose for attempting to transport stolen documents to Japan.

The admissions come shortly after Hitachi settled out of court in the same case on terms generally thought to be highly favourable to IBM.

The case began in October 1981 when IBM called in FBI agents for a security investigation. The FBI set up a "sting" which involved some controversial police methods.

Eighteen Japanese, an American and a Iranian were arrested as a result of this by Justice Department officers in June 1982. They were said to have been seeking details of IBM's MVS software operating system, and the 370, 4300, 3380 and 308X hardware ranges.

It is still unclear how much of value IBM has lost, but it says it will not sue Mitsubishi because there was no opportunity for it to use the stolen data. A Mitsubishi employee was arrested with the documents on board a plane bound for Japan. Mitsubishi earlier admitted paying $20,000 for the information.

Hitachi, which had said it paid $546,000 to "buy" the details it wanted, agreed at the beginning of the month to let IBM look at any of its new products for the next five years. It also agreed to pay the costs of the case, estimated at several million dollars.

IBM still has a case against National Semiconductor's subsidiary National Advanced Systems which is closely linked to Hitachi. NAS dismissed two employees who were involved.

As the end of the affair comes into sight, relations between IBM and its Japanese rivals could return to normal. One sign of a more stable climate is this week's agreement between IBM and Fujitsu whereby the Japanese firm will pay royalties on software it develops to be compatible with IBM machines.

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Scientist slams government muddle

by John Riley

TOP scientist Sir Ieuan Maddock has slammed the official muddle that is hampering the UK's semiconductor industry.

Maddock has criticised the "poor co-ordination between the Defence and Industry Ministries, the British Technology Group and the Science and Engineering Research Council," which results in a failure by the government to promote the semiconductor industry adequately.

The former chief scientist at the Department of Industry called for responsibilities to be concentrated in a separate and new Ministry of Communications to boost the semiconductor industry and to recognise the vital role it plays in the economy.

"It is ironic that a country that has found it possible to spend tens of billions of pounds propping up the industries of the past, has failed to give proper emphasis to the most important basic industry of the future," he said.

Maddock has a clear programme for such a new ministry, which would converge the separate initiatives of the Department of Trade and Industry, the Ministry of Defence and the Science and Engineering Research Council.

Its aims would be:

- to take positive steps to encourage joint ventures and international alliances to ensure a healthy semiconductor industry;
- to help non-electronics companies develop bespoke applications micro circuits;
- to set up silicon foundries to allow the conversion of bespoke designs into components;
- to sponsor telecommunications and information technology networks and computer aided design, manufacture and testing;
- to provide the market pull to produce leadership in chip design by intervening in public purchasing.

James Malcolm, head of the electronics section of the National Economic Development Office, expects the government to sit up and take notice: "I would be disappointed if Maddock's paper did not have influence in the relevant parts of the DoTI."

Maddock's report follows hard on the heels of a report by the Prime Minister's Information Technology Advisory Panel. That report said that information is an industry in itself and should be taken seriously as a commodity in its own right.

It also recommended that a separate government department should be set up to look after information technology.

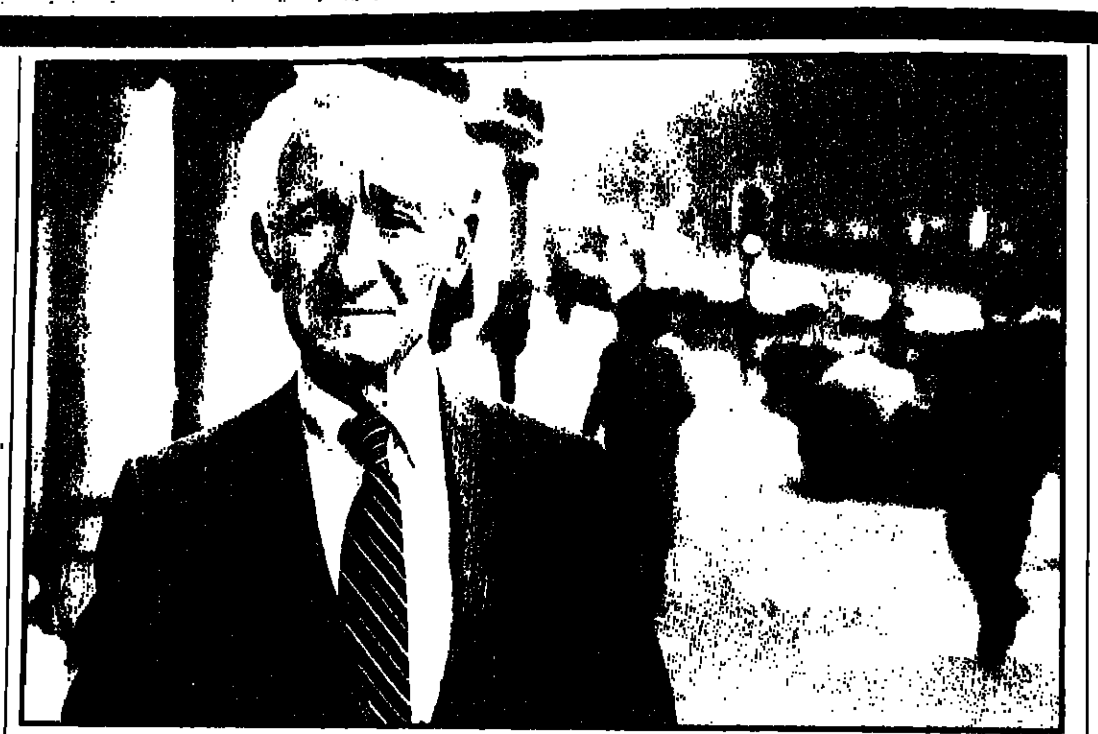
Last July, Dr Jim Merriman, former chairman of the National Computing Centre came to the same conclusion on telecommunications and called for a separate Ministry of Telecommunications.

Merriman highlighted the difficulties of achieving co-ordinated policies while more than one master was being served.

In the past, the idea of a more powerful information technology ministry has been resisted by Whitehall on the grounds that too much power could be concentrated in one department under one minister.

The council of the Electronic Engineering Association (EEA) has expressed a favourable view of Maddock's argument, althought it still has to consult its members before making a formal statement.

The EEA is currently restructuring its organisation and last week announced the formation of a new information technology division. That division, whose members comprise most of the major UK electronics companies, will liaise with government, national and international bodies.



WIGGINS . . . "More knowledge of Europe's needs."

Paradyne plans a push

by John Riley

US DATA communications company Paradyne is to boost its software development effort in the UK to help European sales. The news was announced by Paradyne's president and chief executive, Bob Wiggins, in London last week.

Wiggins, in Europe with several senior vice-presidents this week, is taking advantage of the Telecom 83 show in Geneva to launch new products and also to size up the European market.

"We want to have more product development capability overseas," said Wiggins, "and we have to know more about the products needed by Europe. We will take on staff to carry out research and development in communications software, using our systems support centre in Windsor as a base."

The company, which had a turnover last year of $207 million, but whose share price is now trailing, has been trading in Europe over the past five years or so through Case, Ericsson, and, more recently, through the French company Sesa.

Paradyne also manufactures Cases's DCX switching multiplexers in the US. It now hopes to expand its direct selling in Europe, especially to PTTs and multinational companies.

At Geneva this week, Paradyne launched two new families of modems, both of which offer synchronous speeds of up to 9,600 bps. The new ISP family, which has programmable LSI integrated circuits to digitise tasks such as filtering, demodulation and timing recovery, is designed specifically to meet European PTT requirements.

The MPX series of signal processing modems also features LSI circuitry as well as "soft straps" and fault isolation facilities with optional diagnostic boards and multiplexer cards.

A third offering is a 14.4Kbits/sec modem combined with a statistical multiplexer. It provides eight or 16 channels, and with a two-to-one concentration ratio it supports an aggregate of 28.8Kbits/sec. It also supports split stream applications.

Paradyne's shares are currently standing at the low point of $15¼. Wiggins says that there is no connection between the share price and the law suit brought against the company last May by the US Securities and Exchange Commission which alleges that Paradyne used a mock-up data encryptor to win a $84 million social security administration contract.

"They say we did wild things — we say we didn't," said Wiggins. "The customer was delighted with the equipment and the price and has paid up."

Wiggins attributes the share price to other factors: "We had a fine 1982, and grew by 49%. That ate into our order backlog and so we needed more quick turn around business. Sales training fell behind and we now are rebuilding our sales organisation."

US mini maker forced to go bigger

by Caroline Burgess

THE recession has now forced US minimaker MAI to build bigger machines, it was announced last week.

At the launch of its top of the range 32-bit mini, the new 8000 series, Albert Snellink, MAI's Northern Europe vice-president, spoke of "a severe recession hitting the small businessman — MAI's initial target market — very hard."

Last year, MAI managed to maintain its growth in sales but was left with reduced profits.

"With the series 8000, MAI is aiming at companies and institutions with more than 200 employees," said Snellink, "and in particular the second time user."

The three model range offers up to three processors designed to share tasks equally, giving up to 6Mbytes of internal memory and supporting a maximum of 96 terminals.

SNELLINK . . . "The recession has hit the small businessman."

All will run MAI's own operating software, Boss. Snellink claims MAI has "a huge library of application software the end user can choose from," developed by its own software department and independent vendors. The range is priced between $50,000 and $500,000.

"We will be attacking the European market very aggressively," said Snellink. "Europe is growing faster than the rest of the market for business computers."

During 1983, MAI doubled its number of European distributors and service offices. It now manufactures about 125 systems per month for the European market.

Snellink claims that benchmark studies have proved the series 8000 "outperforms comparable systems from IBM, DEC and HP" and that on average, "the competition is up to 20% more expensive".

Also introduced with the new models was X.25 communication software, MAI's own networking capability Checker, and Origin, a menu-driven data management product for writing applications.

Interactive Cobol and improved printers should be available next year.

MPs return to work and fray

by our Parliamentary Correspondent

PARLIAMENT returned on Monday from the long summer recess and MPs and peers were plunged back immediately into the legislative fray.

With Labour renewing its pledge at its Brighton party conference to resist by every available means the privatisation of British Telecom, a line-by-line battle is to be expected during the return committee stage of the British Telecommunications Bill.

It is probable that the government will be forced to impose a compulsory timetable before long to speed the remaining stages of the bill and thwart any attempt at a filibuster.

But a lot of the sting has been drawn from the opposition in the Lords to the Data Protection Bill. Important government amendments have made the measures more acceptable to its critics.

The Lords completed the committee stage of the Bill at the end of the last session, and on Monday began work on the report stage. The government was hoping the Lords would be able to complete work on the Bill this week, helped by a government concession on immigration control. The Bill will then have to be taken through all its stages in the Commons.

Lord Elton, the Home Office minister in charge of the measure, has carried out consultations during the recess. When peers returned from their holidays they found he had drafted amendments which will remove the exemption originally proposed in the bill for data concerned with the control of immigration.

Apparently, the government looked again at the potential risks to immigration control if the limited exemption in the Bill was removed.

Meanwhile, the Home Office and the Department of Trade and Industry are hard at work putting final touches to the Bill dealing with the extension of cable television. The Bill should be ready for production either in late November or early December and it is hoped to get a second reading before Christmas.

The appointment of the "five wise men" who will be considering the merits of the 37 applicants for the pilot cable scheme should lead to early decisions being made on up to 12 licensees.

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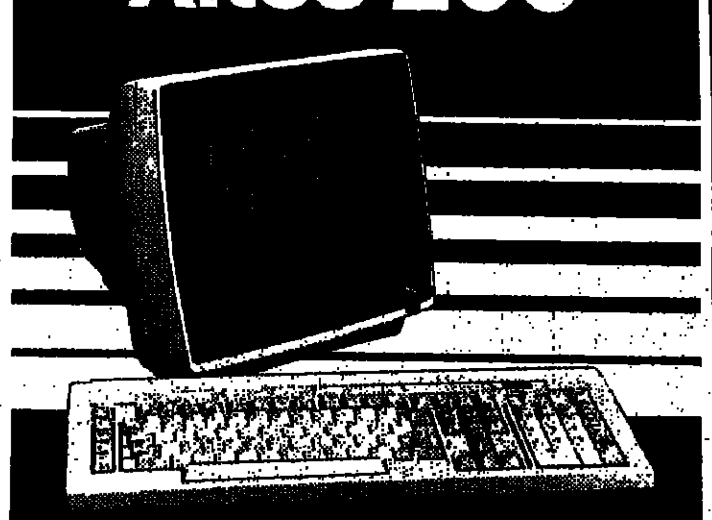

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Acorn and Commodore rapped over ads

by Keith Holder

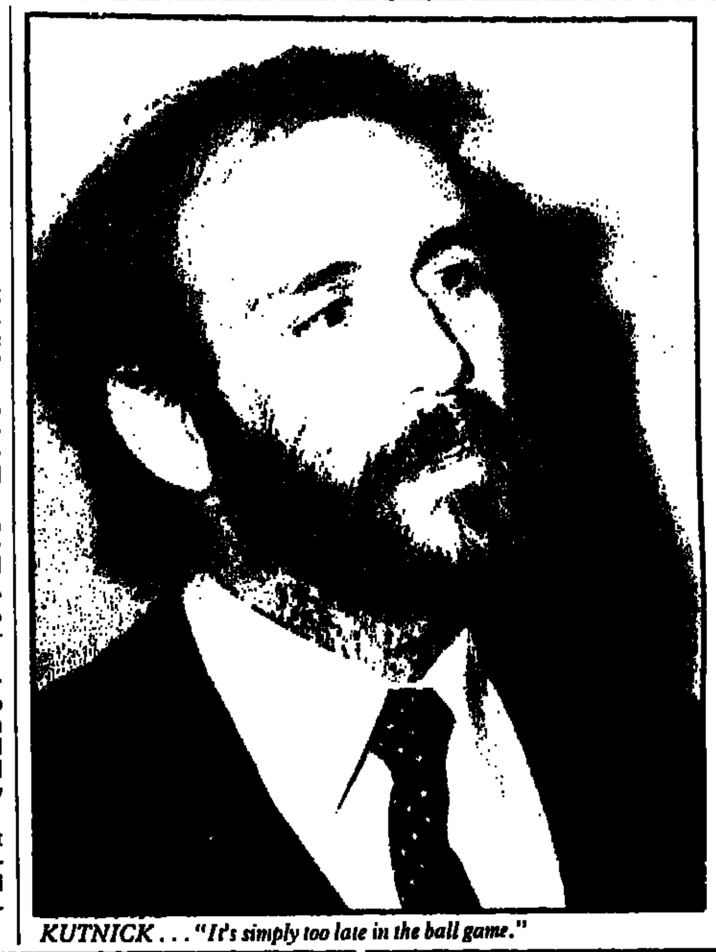
MICRO manufacturers, including Acorn and Commodore, have been rapped over the knuckles by the Advertising Standards Authority for false claims.

Three complaints were upheld against Acorn, which manufactures the BBC Micro, for advertising products not yet available and abusing statistics.

Defending the advertisements, an Acorn spokesman said references to products including Prestel and Teletext adaptors, and 6502, Z80 and 16032 second processors, were to show customers the computer's expansion potential.

He argued that in a second advertisement, which claimed 80% use of the BBC computer in schools, the statistic was qualified as being based on orders received under the Department of Industry micros in primary schools scheme.

The authority did not agree that any of these points was made sufficiently clear, and it has asked Acorn to modify future advertisements.



KUTNICK . . . "It's simply too late in the ball game."

IBM's SNA is set to be the standard

by Donald Kennett

IBM's networking strategy will become the industry standard, despite international attempts to rally behind Open Standards Interconnection.

OSI standards being promoted by the International Standards Organisation will be too late to beat IBM's Systems Network Architecture (SNA) according to Dale Kutnick, research director of US consultancy The Yankee Group, who spoke in London last week.

Speaking at the company's London seminar on office automation last week, Kutnick said: "I think OSI isn't going to make it. It's simply too late in the ball game. Users have already started building their SNA networks."

About 50% of large system users were using SNA, he said, and Prime was the only minicomputer vendor that hadn't delivered any SNA products.

Sophisticated networking was the key to integrating desk-top computers into the mainframe environment, he added. Network service providers that helped companies to control their communications could gain a large share of the market. They would have to embrace the micro revolution by supporting specific desk-top hardware and offering a logical migration path with upwardly compatible software for vertical markets.

"This is what IBM versus AT&T in the US is all about and it's going to be IBM versus the PTTs in Europe," Kutnick said. "The battle of the network is: where does the network end and user equipment start? The prize is the end user equipment market.

"IBM's strategy is to intoxicate end users with limited processing power. Then they will all want to connect to the network.

"The PTTs and AT&T are in the business to make lots and lots of money. They're not going to help you with efficiency. You are going to have to take control.

"The user doesn't give a damn where the information is, but the corporation must think about it, because the costs are very different if you're accessing a piece of information 25 times a day."

The Yankee Group view of sophisticated networking was that it would have four levels — the host, the supermini, the file server and the communications gateway. IBM was tackling the market with a pincer movement, closing in from the top and the bottom.

SNA was being expanded with a heavy emphasis on network management and new network configurations, while last week's announcements for the PC allowed the user to set up multiple concurrent sessions.

Next year would see an IBM SNA local area network and a vast number of 4300 superminis that would handle the selective distribution of parts of the centralised database.

Esprit future is safe

by John Riley

THE European Parliament last week made key decisions to assure both the political and financial future of the European IT research project, Esprit.

The budget and staffing levels for Esprit, Europe's £950 million response to the Japanese fifth generation challenge, were agreed, and now go before Europe's finance ministers for rubber stamping. Last week's agreement ends a long period of uncertainty about the financial viability of the project.

The European Parliament adopted its Energy, Research and Technology Committee's report on Esprit last Friday. That means that the Esprit proposal has passed all but its final stage — formal approval by the Council of European research ministers. The ministers are meeting today and are virtually certain to give that approval.

The main cause for worry has been that the financing of Esprit would be slashed as a result of the severe budgetary difficulties facing the European Community as a whole.

The preliminary draft budget for the 1984 projects drawn up by the European Commission asked for £160 million and 91 administrators. The draft budget reworked by the Council of European finance ministers slashed that sum to £60 million and no administrators.

Last week the European Parliament voted an amendment that restored the original sum and 91 staff; that amendment was vetted and accepted by its Committee of Budgets. The Plenary session of Parliament is now expected to adopt the restored figure at its meeting in Strasbourg this week.

Although the Bill has to go back to the Council of European finance ministers before final ratification in December, commentators in Luxembourg consider that the Esprit package will now remain intact.

Control Data takes on United and 1,300

by George Black

US mainframe manufacturer Control Data Corporation is to take over the bureau and computer services company, United Information Services.

An agreement in principle was revealed last week and is expected to be formalised by the end of the year. The sum involved is still not known.

At the same time Control Data is launching a joint project with the parent of its new subsidiary, United Telecom, which is one of America's largest telephone undertakings. The plan is to develop a new digital data packet-switched network to succeed its Uninet system.

The outcome is intended to be Uninet-11, a synchronous and asynchronous network for launch in 1985.

PRICE . . . Advantages.

The takeover gives Control Data 1,300 extra staff in the US, Canada and the UK, where United has 250 people. The agreement was welcomed by United chairman Paul Henson, who said its leadership in communications would be matched by Control Data's leadership in the computing sphere. Control Data president Robert Price said it would bring technological advantages to both companies.

United Information Services is said to be retaining its identity as a single division within Control Data. United's computing operations have been a mixed bag in recent years, with success on the software side outweighed by recession at the bureau, leaving a deficit of more than $11 million for the second year running in 1982.

With Uninet complementing its own Cybernet, Control Data may be able to expand its communications activities as the bureau business generally declines.

For United it is just the latest step in a whole series of mergers and takeovers over the past 15 years. The organisation began as Atkins Computing, an arm of consultant W. S. Atkins, which combined with Online to become Atkins Online. In 1979 that firm combined with London United Computing Systems and thus became United Computing Systems.

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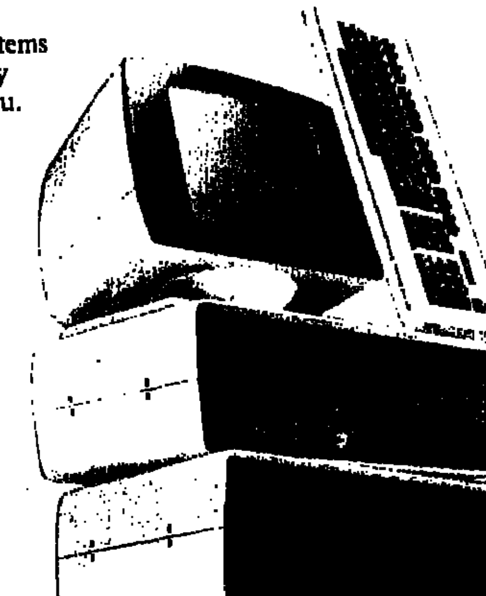

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DEC pacifies its Unix doubters

by George Black

DEC sought to allay doubts about its commitment to Unix at a seminar held in London last week.

Its UK software marketing manager, Peter Griffiths, told the meeting that DEC would be firmly behind Unix running in native mode on its hardware, as well as layered on to its own VMS operating system.

Unix was already available in native mode on the 16-bit PDP-11 machines in version seven, he said, and native mode Berkeley 4.1 or 4.2 Unix would be launched on the Vax by the end of the year. Unix would also be introduced on the Professional micro in native mode by the year-end.

He also promised continuing enhancement to the Unix-VMS coupling, with a C compiler and runtime library, and code and module management systems.

He was seeking to kill fears in the industry that DEC was halfhearted in its support for the multi-user system.

He said, about worries that the only DEC people to be involved in Unix projects were at the New Hampshire research centre. "We have already held a training session for 20 people at Reading. We will have the people with the expertise ready for the launch."

DEC is said by the Microelectronics Applications Research Institute (MARI) to have spent over £300,000 on its Unix-based Newcastle Connection system. But Griffiths said DEC was not at the MARI seminar to make any announcement endorsing the Connection.

IBM also had a man at the seminar, but in usual style was keeping its cards close to its chest.. An announcement on its plans for Unix is generally expected in the next few months and delegates agreed that "whatever it says, it's bound to be good news for the Unix community".

IBM has been getting round the shortage of expertise by funding several small software houses on Unix projects and backing research at a number of universities, notably the University of Illinois.

IBM is believed to have held talks with Connection developer Brian Randell – but, as one observer said, "the fact that IBM spends a few million dollars on a concept doesn't mean you'll ever see a product from it".

But old Unix hackers have growing worries that commercialisation of the operating system, much predicted to boom in 1984, could swamp those very aspects that made it appealing to academic programmers in the first place.

The history of the PC suggests that an IBM endorsement would make it respectable, but would not necessarily ensure the success of the highest technical merit.

"The whole Unix philosophy is in danger of getting lost somewhere along the way," said MARI technical director John Dobson.

I feel that there are a lot of people who still don't understand what we have been trying to do with the Connection and who are therefore making criticisms that aren't relevant.

DOBSON . . . "Philosophy is in danger of getting lost."

COLLINS . . . Negotiated.

Europe sales boost Cincom's earnings

by Ron Coates

DATABASE specialist Cincom has boosted its earnings by 40% with a major push from sales in Europe. And the company is on the verge of a $30 million deal for its main product, TIS (The Information System).

Revenues on this side of the Atlantic jumped by 60%, from $11 million last year to $17 million for the year ending September 30. Sales overall moved to $76 million from $54 million for 1982.

Dick Collins, Cincom's European general manager, last week said: "We have negotiated a $30 million deal with a major international corporation for TIS and we hope it will be closed within a week or so."

He attributed the company's growth in Europe to sales of Cincom's development language, Mantis, and the Europe-wide push of the company's database system, TIS.

And the company last week launched a new series of products aimed at users of 3270-type terminal networks under the slogan of "personal computing without personal computers".

The announcement came only two days after IBM released its long awaited enhancements for its personal computer which allow the latter to communicate with similar networks.

The first three products of the Manager series are: an online interactive graphics output system, Mangraph; an online document creation and editing package, Mantext; and a Visicalc-like spreadsheet system, Mancalc.

The company is planning further releases to the series.

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Inmos signs second source for first time

by Keith Holder

INMOS has signed up an American second source – the first deal it has made for another manufacturer to build an Inmos design.

UK government-backed Inmos will manufacture the chip in its US plant in Colorado Springs, while the US-based General Instrument will make it at its Scottish factory. Inmos will bring production to Newport if orders are big enough to justify volume production.

General Instrument will get masks and processing information for Inmos 64K electrically erasable PROM, but neither company will build the chip before next year.

This type of agreement is necessary if the company wants any chance of selling the device in the world market. It was not needed before, said Inmos marketing director David Sherwood, "because our competitors were quick to copy our devices, providing a ready made second source".

Although Hitachi, Seeq and Zycor have all announced 64K EEPROMS, which will be available next year, none was compatible with the Inmos device.

The agreement was negotiated by the US arm of Inmos at Colorado Springs.

The choice of General Instrument was made, according to John Heighley, president of Inmos' US operation, because it has "a well known and respected track record in EEPROMs".

General Instrument is the world's leading supplier of EEPROMs. It had semiconductor sales of $270 million last year, mainly for the video game and electronic market.

The device is a high performance, five-volt, non volatile memory, which allows data to be stored in a computer even when the power is off, and allows a computer to be programmed at will.

Heighley said that the transfer of technology had already started, and a strong working relationship was forming between the two companies.

Joseph Krystoff, marketing manager for General Instrument, said that the agreement would enhance the company's commitment to expanding its EEPROM offerings.

Rita finalists chosen

THE finalists for two major UK computer industry awards were chosen last week by the judges for Rita (Recognition of Information Technology Achievement).

In the running for the Newcomer of the Year award, which is sponsored by *Computer Weekly*, are Bluebird Software, the London-based IBM mini software house; Medical Systems, specialist in micro-based software for hospital consultants and supporting staff, based in High Wycombe; and Tycoth, the entrepreneurial London microcomputer builder.

The three finalists for the Systems Innovation of the Year award, jointly sponsored by the National Computing Centre and *Computer Weekly*, are Brailleweriter, an electronic note-taking device for Braille users, which is produced by Pathway Communications of Hereford; Signcheck, a low cost signature verification system from Rediffusion Computers of Crawley, Sussex; and Micronet 800, an access system to Prestel made by Telemap.

The Rita awards judges are Doug Eyeions, director general of the Computing Services Association; David Firnberg, deputy president of the British Computer Society; David Fairbairn, director of the National Computing Centre; Ted Cluff, secretary general of the Institute of Data Processing Management; and Dr Paul Freeman, director of the OCTA.

SALES BRIEF

Microdata heads for £60m mark

MINICOMPUTER manufacturer Microdata is heading for a £60 million turnover this year as it continues to score with public sector customers. Last week the company announced £850,000 worth of business with four Derbyshire local authorities and the Northumbria police.

Three of the authorities ordered Sequoia 32-bit superminis worth £175,000 each for financial applications, including rent and rates accounting, and another ordered Reality system for £193,000. Kirklees Metropolitan Council has just installed a Reality system to help administer the payment of parking fines.

Keeping records

LIVERPOOL University has turned to Applied Micros for a £200,000 administrative system, based on the Fortune 32:16 micro. The system uses the Unix operating system and supports four independent workstations for financial planning and maintenance of course records.

Collect data

CAP Northern is developing a shop floor data collection system as part of an £8 million factory automation programme for British Nuclear Fuels Ltd (BNFL). The system will be based on a DEC Vax-11/730 and will help with quality assurance and provide customer information at BNFL Magnox Canning Plant at Springfield Works.

Micro supply

MBS Microtex of Eton has supplied British Telecom with 100 of its Altos micros, worth in all about £400,000, following the announcement of further contracts. One of the main uses is product testing of specifications for transmission equipment, and three of the machines act as gateways to a network covering BT's seven districts.

UK distribution

A £500,000 deal has been signed for the distribution of a microcomputer based data retrieval system developed by Derwent Data Systems. Microtechnology will market and distribute the system throughout the UK, while Derwent will continue to sell to OEMs and manufacturers.

Hungary sale

FERRANTI Computer Systems has taken its second order from Hungarian publishing house Filmsatz. The first order was for computer-based typesetting and composing system in Budapest and the new order worth £300,000 is for two Ferranti CS7 typesetting systems to be linked up with the existing system by telephone line.

Safe for fabrics

SAFE Computing has won a £50,000 order to computerise the fabric division of textile maker Courtaulds, which supplies knitwear and underwear to Marks & Spencer.

OTL sells 400

AN ORDER for five Office Technology Ltd. (OTL) Displaywriter word processors from Seven Seas Oil & Gas brings total sales to 400, worth about £3.5 million, since Data Recall the developer of the product was taken over by IBM on April 1, 1983. Exports of the product are up 40% on the same period last year.

Tobacco buy

REDIFFUSION has sold an R2800 Telecentre to Molins Tobacco as an upgrade to existing equipment for data entry on a production control system based on an IBM 4331 mainframe. The order includes 17 Ifield workstations and the Advisor office management software.

Bull's capital increases

by Jack Gee

CII-HONEYWELL Bull, the holding company of France's Bull Computer Group is to increase its capital from FFr 861 million (£71 million) to FFr 2,460 million (£205 million) in order to present a healthier financial appearance. This will reduce the stake of Honeywell Information Systems from 19.9% to only 7%.

The lowering of Honeywell's stake in Bull reflects the American company's refusal to pump more funds of its own into a company in which the French State already holds 81.1% of the equity. This will now be raised to 93%.

The operation is being conducted by the issue of 15,991,705 new shares at FFr 100 (£8) each.

Although Honeywell was already reluctant to remain a substantial partner with the French government in Bull, its decision not to bid for any of the new shares is also dictated by the American firm's own difficulties in the computer market.

But Honeywell has assured Bull that its technological agreements will not be affected by the reduction of the Minneapolis-based company's financial involvement.

The French government is providing FFr 1.5 billion (£120 million) in fresh funds for Bull this year. This sum will help towards the increase in Bull's capital. But in 1984 capital provision by the State will fall to FFr one billion (£80 million).

Even with the new capital injection, Bull's financial predicament remains extremely parlous. Last year it cost FFr800 million (£64 million) to service debts totalling FFr7 billion (£560 million).

Until the State take-over of Bull last year, Honeywell had a 49% stake in CII-Honeywell Bull. The majority 51% stake, originally held by Compagnie Generale D'Electricite, was owned by Saint Gobain.

Saint Gobain, a conglomerate which carries out activities ranging from glass to packaging, has now completely withdrawn from electronics and computers in the framework of France's 1982-1986 electronics plan.

Bull is expecting a new cash injection following the sale of its 24.9% stake in Olivetti. These shares, worth FFr billion (£80 million) are being purchased by Olivetti and Compagnie Generale D'Electricite.

ICL bosses need skills, say staff

by John Kavanagh

ICL middle management skills need urgent attention. So said ICL's personnel director, Don Fraser, in a report on a staff survey.

The survey showed that ICL employees were enthusiastic about their jobs and believed their managers were committed to hard work and high standards. But most also felt their managers lacked people management skills.

"People management is a key issue to emerge from the survey, with communications at the personal and individual job level needing the most immediate attention and action," Fraser said.

"My task will be to ensure that our management development programmes continue apace."

Around 70% of staff felt their managers did not know of their ambitions. Nearly 60% said their managers did not show them how to improve performance. And 80% felt their views on important matters were not passed to higher management.

Over half did not think their jobs were viewed as important by managers and 60% felt they did not get recognition for doing a good job.

"If ICL is to use its human resource, it is important that all the staff should feel their ambitions are understood and that they can develop their careers through helping the company itself progress," Fraser said.

However, over 80% of staff said managers set an example to some extent or to a great extent by working hard. And around 70% felt enthusiasm and personal involvement in the work of their departments.

Staff were split on pay and conditions. Almost 15% thought ICL pay was good, 35.5% said it was average and the rest said it was poor. Nearly 40% thought employment conditions were good and 40% said they were average.

The white-collar union, ASTMS, was "encouraged that ICL management had explored the feelings of its staff". It added: "We hope the emphasis put on upwards communication will be translated into action."

The survey drew responses from 7,600 employees, 46.5% of the workforce.

■ ICL is launching in the next two months a range of personnel management systems originally developed for the company's own personnel department. Personnel 20 runs on the DRS20 distributed system of micros, and versions for the System 25 mini and the 2900 mainframe will be announced shortly. Next year a new version of the Content Addressable File Store (CAFS) with data protection facilities built in will become available with the packages.

FRASER . . . "People management is a key issue."

Firms in US settle 18-month legal battle

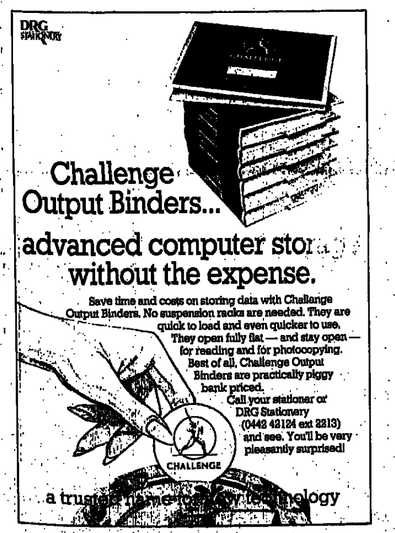
by Howard Karten

TEXAS Instruments and Compaq Computer Corp of Houston, Texas, recently settled an 18-month-old legal battle.

Shortly after the introduction of the Compaq computer, a portable device generally regarded as nearly identical functionally to the IBM PC, Texas Instruments sued Compaq charging patent infringement, piracy of employees and other damaging actions.

In a consent decree signed recently in the Federal District Court in Houston, Compaq admitted two counts of patent infringement.

Compaq attorney Paul Janicke stated that the infringements occured in components which Compaq purchases from sources other than Texas Instruments. However, Compaq also buys a good deal of its semiconductors from Texas Instruments.



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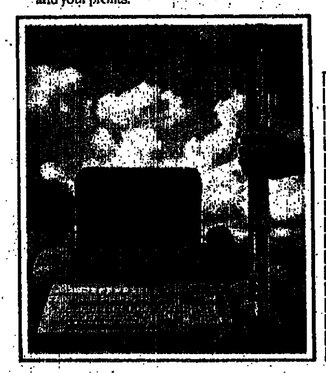

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Digico looks for merger partner

by George Black

PIONEER British mini and micro manufacturer Digico of Leeds is to merge with another unnamed computer company in the next two months.

Digico, which made losses of over £1 million in the 1981-82 year following the launch of its Zilog Z80-chip based Prince micro, seems to have recovered this year and expects losses of not more than £200,000 on a £4 million turnover.

But it needs a wealthy partner to sustain its position in a rapidly changing market, according to managing director, Ken Atkinson. He has been talking to several interested parties and plans an announcement before Christmas.

The Letchworth, Hertfordshire factory has been closed with some workers laid off, but manufacturing continues in Leeds and maintenance in Stevenage. Atkinson said £500,000 worth of hardware had been shipped in September. There are 85 staff still on the books.

ATKINSON . . . Needs partner.

Digico was founded in the mid-sixties at Welwyn Garden City by Keith Trickett, later managing director of the CAD/CAM house Compeda. Its aim was to launch the Micro 16 machine, with government backing, to compete with DEC's PDP-8 in the scientific field.

It prospered on a range of minis and micros from then on, but the Prince, using the CP/M operating system and launched in March 1981, brought a new set of problems in adapting to the world of more generalised micros.

The £400,000 profit of the 1979-80 year soon vanished as the company went into the red. The opening of the Leeds head office in 1981 also caused it to dip into its pocket. A private share placing by holding company Spanverne Investments helped it with £2 million.

"We're coming out of a period of heavy investment and our losses have dropped sharply, so we're now in a position to talk to potential partners," said Atkinson.

Verbatim expands in Ireland

by Nuala Moran

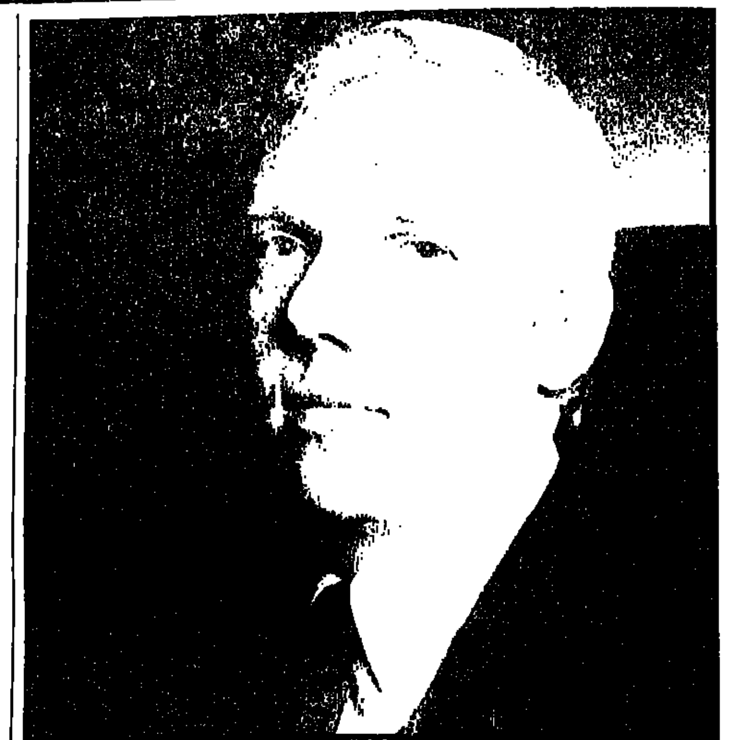
THE Californian disc-maker Verbatim has announced plans to build a third factory at its site in Limerick, Ireland. This brings its Irish investment to £32 million. The plant will produce 5½ inch minifloppies and 3¼ inch microfloppies.

Nicky Hartery, managing director at the plant said: "When Verbatim came to Limerick there were plans for five plants with a total area of 40,000 square feet. The total area will still be the same but we found there was no need to go so small because our production is very automated."

Once the factory is finished there will be 150 new jobs, bringing the workforce to between 625-650. "Job types will vary from unskilled to semi-skilled and skilled with about 35% being in high technology including engineering," said Hartery.

Production at the factory will be primarily for Europe, but Hartery said it would also be selling to Japan and filling in if there was any shortage of US produced discs.

It is expected that the factory will be completed in December 1984. Hartery said: "I hope it is about 15 months before the factory is going at full tilt. By then we will producing three million micro floppies per month."



TRANMER . . . "Unix market seems fragmented."

Unix specialist gets US finance

by Claire Gooding

UNIX-specialist Precision Software is to sell its software in the US on the strength of £½ million venture capital. The backing comes from independent technology investor, Alta Berkeley, which specialises in UK firms wanting to sell in the US.

The Surrey-based software house was one of the first package vendors to commit itself to the Unix operating system. The 20-strong company has already sold business packages for Commodore machines, and started to write Unix business applications from scratch a couple of years ago – well before the operating system had gained its current success in the 16-bit market.

It has been selling its software in the US in a small way, but needed more staff and extra finance to do the job properly.

"We foresee staff expansion of over 50% in the next six months," said Precision Software managing director John Tranmer. "We'll be using the money to recruit staff in the US and build up our Manhattan office. Some of it will go on software development, adapting the packages for such things as US accounting standards."

Precision will be selling the Commodore business packages through the US branch, but most efforts will centre on the up-and-coming market for Unix applications.

The company recently launched its Unigem integrated business package, a range of sales ledger, stock control and sales invoicing programs based around a real time database. It also offers office automation tools including the XED word processor.

"At the moment, the Unix market appears to be fragmented," said Tranmer. "We are really competing in the vanguard of the Unix movement. There are large numbers of new suppliers competing with Unix machines, all fighting it out to get there first.

"Once the market becomes established the big boys, including IBM, will move in: we're already beginning to see it happen. No-one will be without a range of Unix-based products by the end of next year – and we can do justice to a potentially explosive market."

Precision took its business to Alta Berkeley because the venture capital fund has strong links with the US. "They were the most professional venture outfit we spoke to, and they had an impressive list of investors," said Tranmer.

Mark Diskin, a partner in Alta Berkeley's company, stresses that the venture capital group gives help with marketing.

Andromeda's ex-maker in the red

A recent creditors meeting revealed that Information Technology Computer Services, the former manufacturer of the Andromeda series of portable microcomputers and sister company of Staines based ITCS Ltd, has debts totalling at least £820,794. The company is in creditors' voluntary liquidation and the liquidator is David Morgan of accountants Alfred Tooke, of the Spicer and Tegler Group.

Logica survey

LOGICA is to publish a new edition of its Telematics market information survey early next year based on interviews with users and suppliers of high technology throughout Western Europe. Five modules, costing from £5,500 to £7,500 each, will be included, on the office systems, data terminal, data network, connection and business markets.

Serious Systime

UK SYSTEMS builder Systime is going for south-east Asia markets in earnest after setting up a subsidiary in Singapore. It has sold systems in the region through distributors and expects south-east Asia to be the fastest-growing market for the next 10 years. Systime's other subsidiaries outside Europe are in India, Hong Kong, the Middle East and South Africa.

Disc merger

SHUGART and Century Data Systems, both Xerox disc subsidiaries, have merged their European sales and marketing operations. The combined operation will cover disc drives including floppy, Winchester and optical discs. Other operations of the companies will not be affected by the merger.

Terminal factory

VT-100 COMPATIBLE terminals developed by Capitol Computer Technics of France will be assembled and distributed by Basebridge Ltd in the UK. Basebridge is setting up a new factory in Basildon, Essex. The 15-inch terminals are aimed at DEC users and OEMs, and will operate with any screen editor currently available from DEC.

Dogs chosen

DOGS, the drawing office graphics system developed by Pafec, has been chosen by Rotring for its launch into the CAD/CAM market. It will be marketed by the company's German subsidiary Rotring EuroCAD initially in German speaking countries though there are plans to expand it to cover the whole of Europe.

Pafec already has agents in other countries including the US. Features for Dogs include database which can automatically produce parts lists and costings and the ability to merge detail drawings into assemblies.

HAL expands

PRINTERS have been added to the microcomputer peripherals sold by UK distributor HAL Computers. The company has so far specialised in floppy discs but has now been appointed sole UK distributor for printers from KDC. The daisywheel printer runs at 14 characters a second and the matrix unit at 100 characters a second.

Sorry, Vernon

THE story published last week on US systems house BGS pictured Vernon Northover, manager of UK operations at the company's new London headquarters, and not, as the caption said, BGS president Bob Goldberg. Sorry.

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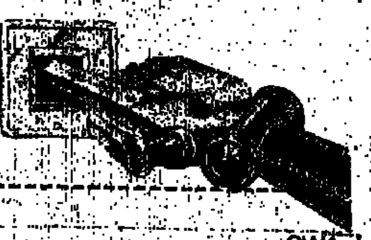

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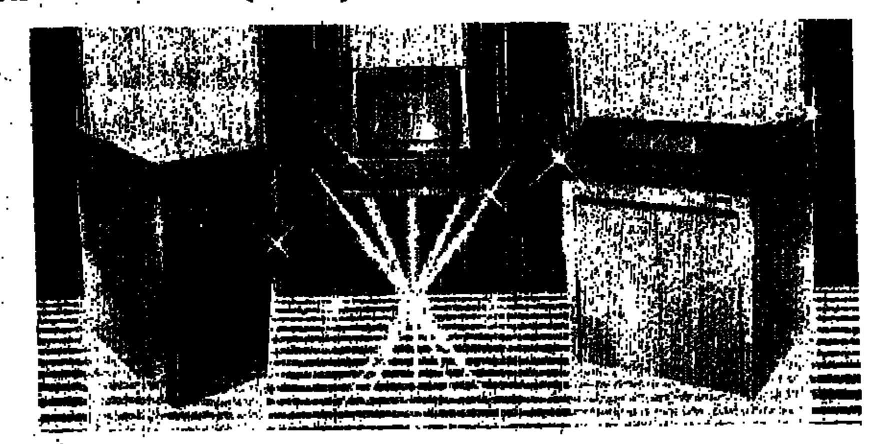

nt northern telecom

Where computers and communications meet

Quest turns in loss of over £5m

by Keith Holder

QUEST Automation, the erstwhile parent of Quest CAE, has announced £5.15 million losses in the year ended February 1983. But the company is now trading profitably.

Tony Ebel, the company's chief executive, explained that the loss figure was inflated by extraordinary items and write-offs which happened later this year, amounting to £1.66 million.

The reason for this, he explained, was to let the company "start with a clean sheet," now that investment in Quest CAE had finished on its sale to Marconi. This put the real loss at £3.49 million, compared with a £2.86 million loss the previous year.

Now that this had happened, said Ebel, he was able to announce a pre-tax profit of £38,000 for the first six months of the current year.

He added: "We hope that this means that we have turned the corner and will continue to improve." He claimed that there was no reason to expect the company not to turn in an overall profit at the end of the year.

The face of the company is changing too, he said. "In a year's time it will look very different from the way people see it at the moment."

The changes follow centralisation at Chandlers Ford, the company's previous manufacturing centre, and a move into the business micro market for Quest International Computers, a division of the company.

EBEL . . . Letting the company "start with a clean sheet".

This involves distributorship of micros from ACT and Digital Equipment, together with peripherals and support. According to Tony Earl, managing director of Quest International, the emphasis is on both pre- and post-sales support including systems engineering and training.

Quest Automation will continue to act as distributor for computer-aided design systems and peripherals, including Micropad. Ebel said that the CAD packages were continuing to sell well.

Trade will also continue with Marconi Quest CAE, though there are no formal ties between the two companies. "Marconi has been the company's largest customer for some time and we will continue to sell to it and buy some of its products for distribution," said Ebel.

MSC takes on two national networks

by Nuala Moran

SOLVING Britain's unemployment situation is becoming a highly computerised business. Two nationwide computer networks centred on the Manpower Services Commission Sheffield headquarters are soon to be completed, the first in December and the second next April.

In December the last machine in the Tops minicomputer system is due to be installed. The network which was started in January 1982, consists of 65 Microdata Reality minis.

It is designed to make payments more efficient at area offices for the Youth Training Scheme, Training Opportunities Scheme and the Community Project Work Experience Scheme. It also does housekeeping, such as paying the electricity bills and staff expenses.

The system means that staff no longer have to use the traditional method of writing out giro cheques by hand, as each mini is linked to a printer. The systems in each area are linked to systems at nine regional offices, which in turn are linked to the head office in Sheffield.

A spokesman for the MSC said that one of the attractions of the Reality mini was that software development could be taken over after initial hand over period. The 64 sites do not have any programming staff, but there is a three or four week implementation period, when staff are trained to use the equipment.

Next April another network is due for completion. This is the computer system which supports the administration of the Youth Traning scheme. This consists General Automation 16/40 954 minis installed in 55 offices and nine regional offices linked to a central computer Sheffield.

This system is designed to lect data about all the courses are being run by YTS and det of the people who are placed courses. Each area office has VDU and the information is in from standard forms. The can also be output in standard port formats to highlight partic features. For example, each has to inform the careers ser when someone is placed course.

A spokesman for the MSC "One of the most important tions is to monitor the progra the YTS scheme. The head management team needs to k how YTS is going – for exa have we got enough places people getting the right kind courses?

The first machines were delivered in 1980. The system originally ordered for the Youth Opportunities Scheme which scrapped last year.

This meant the software had be redesigned and, because operating divisions were nee more machines were needed contract for these machines awarded to General Automa about one month ago.

The MSC also has a national network consisting seven Perkin-Elmer 3220 linked to terminals in the offices. This handles Johnson and was completed in August year.

BT awards medals to System X designers

by Caroline Burgess

BRITISH TELECOM took charge of its first major System X exchange this month and marked the occasion by making awards to two engineers involved in the System X design, Roy Harris and John Martin.

Both were active in the original development of System X by British Telecom, GEC, Plessey and Standard Telephone and Cables. Harris originated the modular design and Martin organised the 1,400-strong design team.

When the bulk of the design was finished in October 1982 STC withdrew from the project. Plessey then became the prime contractor, sub-contracting to GEC.

The new exchange, at Coventry, was manufactured and installed by GEC with the software supplied Plessey. British Telecom hopes to bring it into service by end of the year.

There are already five small-generation System X exchanges the UK. The Coventry exchange the first large trunk call exchange in the country.

British Telecom plans to 12 more next year, with operation by 1988. It should provide an all-digital trunk network covering the UK by then, serving two million customers.

The awards by British Telecom were the Martlesham Medal. It is its own award for an outstanding contribution to telecommunications technology.

The medal was first awarded in 1980.

Micro Scope wins largest order for its space system

by Keith Holder

MICRO Scope has won its largest order for the micro space reservation and accounting system, worth £100,000, from Granada Sunburst Holidays. This makes it the most widely used system of its type in the UK, said manager Carl Nugent.

The order includes the company's first sale of its Space Agent videotex system.

The hardware has just been installed, according to a spokesman form Granada Sunburst, and the company hopes to have the software developed soon so that the system will be running in time for the start of next year's holiday bookings rush.

The Space Agent system will give travel agents direct access to Granada Sunburst's holiday database.

Micro Scope has received orders worth over £350,000 in the last six months for Micro Space. Managing director Chris Sealy said that the travel business made up about 30% of the company's turnover.

The company year end turnover and profits will be announced next week and, though Sealy is not giving away what these figures might be, he said that on the strength of them the company expects to have a turnover of £3.5 million next year.

The company will launch on the European market at next month's Videotext.

SEALY . . . Expansion ahead.

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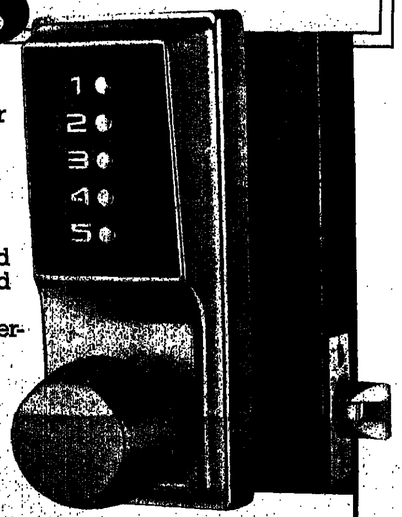

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'Grundy could have avoided liquidation'

by John Kavanagh

DUTCH buyer of the NewBrain portable micro, Tradecom, says that previous owner, Grundy Business Systems, could have avoided liquidation if its owners had held on a little longer and concentrated solely on the business market.

Pushing the NewBrain as a home computer was wrong, Tradecom says.

Tradecom expects to do big business with the NewBrain thanks to its own networking facility and the arrival, five months late, of an option enabling the machine to run the widely used CP/M operating system from Digital Research.

"The CP/M delays hit the company," said Tradecom director Jack Van Der Schrier. "We sold 1,200 NewBrains in the Netherlands in the last year – and that is just the start now that we have CP/M. Grundy could have survived if the management had persevered a little longer."

Van Der Schrier added: "The wrong emphasis was put on the computing games aspect of the NewBrain in the UK. We will be pushing it as a business system and as a schools machine. The schools market is growing very quickly everywhere. We are adding our own networking facility so schools can link 16 NewBrains together."

Tradecom has sold NewBrains to 18 schools in the Netherlands. The company hopes for more success against the Netherlands manufacturer, Philips, now that the NewBrain is Dutch.

Grundy Business Systems' liquidator Tim Flanagan at Deloitte Haskins and Sells also pointed to the CP/M delays as one reason for the company's liquidation. "There is a feeling that if CP/M had been on time the company would have survived," he said.

"The problem was that although Grundy had orders worth £1.5 million, those orders did not marry with the stocks. Two-thirds of the stocks were NewBrains, but most orders were for peripherals."

Tradecom is now talking to former and prospective NewBrain distributors and dealers across Europe, including the UK, in a bid to get sales going again quickly. It is also talking to former NewBrain development staff from Grundy Business Systems.

MITTERRAND . . . *Worried that AT&T might get a stake.*

French buy 10% stake in Olivetti

by Jack Gee

THE French government has given the go-ahead for state-owned Compagnie Generale d'Electricite to spend £32 million on a 10% stake in Olivetti and establish joint ventures which could range from electronic typewriters to floppy discs and screens.

The government has approved the sale by two other nationalised companies of a 33.2% interest in Olivetti, Europe's biggest manufacturer of electronic office equipment. Computer group Bull holds 24.9% and glassmaker Saint Gobain 8.3% of Olivetti.

The 23.2% of the shares which are not being taken up by CGE will be offered back to Olivetti which is likely to sell to another industrial group or to private investors.

"It's a marriage without a dowry," commented a leading French electronics executive when the French government announced the alliance between CGE and Olivetti. The State has refused to provide any cash for the deal.

President Mitterrand and Industry Minister Laurent Fabius consider that CGE, the only French nationalised group making a profit, can successfully handle the financing of the operation.

The French government is particularly concerned that none of the shares which return to Olivetti should eventually go to firms which compete with French electronics and telecommunications companies.

Mitterrand is specially worried about the risk that AT&T, which is involved in talks on joint ventures with Olivetti, should acquire a stake in the Italian firm.

The new alliance between Olivetti and CGE will strengthen the French group's position in telecommunications at a time when its international rivals are joining forces with data processing companies.

The partnerships between IBM and Rolm and between Philips and AT&T are being viewed with concern in some quarters. The arragement between Olivetti and CGE could improve French industry's prospects of defending and expanding its markets in computer-based telecommunications.

Olivetti's chief executive Carlo de Benedetti has been seeking a reduction in the French government's stake in his company since Saint Gobain was nationalised and Bull came under State control last year.

Robert E. Allen, AT&T executive vice-president and chief financial officer, told French bankers and analysts in Paris just before the French government announcement: "We have been having talks with Olivetti. These are continuing. I don't know how they will work out."

Commenting on the possibility of an AT&T bid for a stake in Olivetti, Allen said: "We are not interested in buying market share. AT&T could be particularly interested in Olivetti's European markets now that the American group's manufacturing arm, Western Electric, is to split from its parent on January 1st, 1984."

Tandy gets in on transportable act

by Caroline Burgess

TANDY hopes to cash in on the booming market for transportable micros with a repackaged TRS-80 Model 4. But it will not be available in the UK until spring 1984 and no price has been fixed.

"We aim to address all markets and there is a need for transportables," said John Sayers, Tandy joint UK managing director. "Osborne showed there was a market and it is very wide and growing."

The new Model 4P comes with 64K memory expandable to 128K and two 184K double density 5¼in disc drives. It has a 9in screen and full size keyboard and weighs about 26 pounds.

It will run all Model 4 software and is also compatible with CP/M Plus, which Tandy is hoping to offer soon.

"It can be used wherever there is an AC outlet," said Sayers. "However, it is aimed at the business end of the home market. It is a way of extending the office."

The machine should be available in the US by December and its sales performance there is likely to influence the UK price, which is still being considered.

Tandy claims it always tends to keep prices down.

When the machine is available it will be offered through Tandy Computer Centres, Tandy stores and dealers.

SAYERS . . . *"Market is wide and growing."*

UK telecomms industry flies the flag at Geneva show

by Donald Kennett

THE UK telecommunications industry this week is flying the flag with what it claims is the largest and most comprehensive collection of its products ever shown at an international exhibition to face its competition in Geneva.

The show, Telecom 83, is held every four years by the International Telecommunications Union and is the biggest event of its kind. More than 60 companies will be among the 650 international exhibitors. The UK contingent is led by British Telecom, Plessey, Standard Telephones & Cables, GEC and TMC.

More than 20 papers from the UK will be presented at the accompanying conference by industry leaders including BT chairman Sir George Jefferson, STC chairman Sir Kenneth Corfield and Information Technology Minister Kenneth Baker.

Desmond Pitcher, president of TEMA (Telecommunications Engineering and Manufacturing Association) and managing director of Plessey Telecommunications and Office Systems, said: "Our aim is to build up credibility and the awareness that the UK is back in the world market."

The need to re-establish the UK as a major participant in the world telecommunications market had struck home as far back as 1976, when the decline in BT's ordering of Strowger electro-mechanical exchanges had caused massive cutbacks and redundancies in the UK industry, Pitcher said.

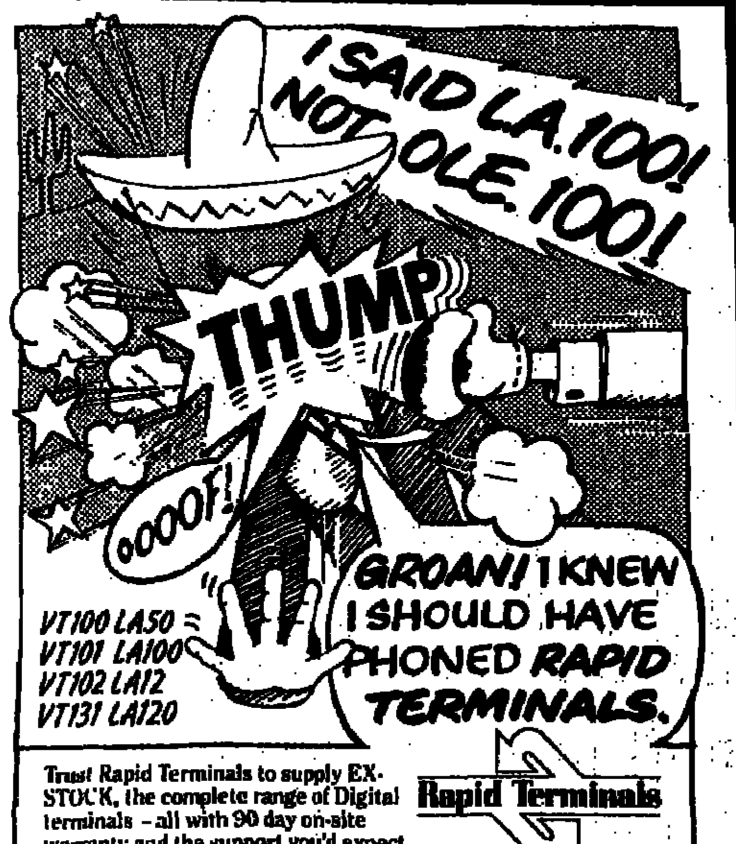
But it had taken time to build-up to re-entry.

"The first new products appeared in 1980," he said, "and people don't always realise that some very significant orders have been taken in the last two to three years.

"Last month we shipped about £10 million worth of equipment to Saudi Arabia to fill orders which were won against international competition."

BT chairman Sir George Jefferson said: "We can't unveil anything quite as dramatic as System X – which by common consensus was the star of the show four years ago. But then the new digital technology was very much a thing for the future. Today it is very much of a reality. System X and the UXD-5B rural digital exchange are just two of the very good things we have."

PITCHER . . . *"Our aim is to build up credibility."*



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Sperry farms out research

by Nuala Moran

SPERRY is pushing its policy of farming out research and development to other companies.

Dr Joseph Matthias, Sperry director of research and techniques laboratory at Blue Bell, Pennsylvania, explained that this technology strategy was started two years ago in response to the exorbitant cost of trying to do everything in-house.

Matthias was speaking at Sperry's conference on Advanced Computer Technology in London. "Last year the computer systems group at Sperry spent $475 million on R and D, $300 million internally and the rest jointly with other companies."

As a result of this policy, Sperry has now abandoned research on mass storage devices. Instead it buys them from Magnetic Peripherals Inc, (MPI) a subsidiary of Control Data.

One of the major projects at MPI is research into optical storage. Philips is also involved in the deal.

Matthias said: "Optical discs should be available in the next two years."

Sperry has contributed $42 million towards Trilogy's programme to develop very fast computers using wafer scale integration. Matthias said: "The agreement we have with Trilogy is secret. We expect to find out how well wafer scale integration works very soon".

Sperry has also invested in the Microelectronics and Computer Technology Corporation (MCC). This is a consortium of all the major US computer companies except IBM, which was set up in response to the fifth generation research in Japan.

"There are no serious programmes yet because the project directors have not been appointed. As soon as they are, work will start", said Matthias.

Sperry's fourth joint effort is with Mitsubishi working on packaging and gallium arsenide technology.

Matthias went on to talk about how Sperry sees things moving in the future. "The technology for systems five years hence is being developed now. Future systems will be smaller, provide more computer power per dollar and be more reliable and easier to use.

"Large sections of the population will have computer knowledge. Managers will have personal computers, and they want to use them to access data bases directly rather than wait for a printed output.

"Voice recognition and voice response will be developed to do away with keyboards."

Matthias explained that voice recognition will not be generally adapted to particular activities, for example a legal voice recognition system. He added: "Such systems are already used by Sperry in some of its manufacturing plants".

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SMITH . . . *"Government has a clear mandate to lobby the EEC."*

NatSemi cements its place in 32-bit market

by John Riley

NATIONAL Semiconductor staked its claim in the race to the full 32-bit chip market last week with the launch of its 32032 chip, due to go into volume production next April.

The company also gave the European premiere of its SYS-16 – a multi-user development system based on its 16000 16-bit chip family – and its In System Emulator (ISE), which can cater for up to eight users.

The 6 MHz version of National Semiconductor's 32032 chip, which has 32-bit interval architecture and data bus, can transfer around one million instructions per second. A 10 MHz version is to be available by April 1984. Within three years, performance is expected to be boosted further with the use of advanced CMOS complementary technology.

"The chip has about 80,000 transistors on the CPU only and that does not include the memory management unit and other units," said Uwe Krause, National Semiconductor European 16000 specialist. "By the 1990s more than 50% of microprocessors will have 32-bit architecture.

"The key question is how well micro controllers can support high level language compilers, and you need 32-bits for that."

The 32032 is compatible with NatSemi's 16-bit 16000 family and is supported by the 16081 floating point unit and the 16082 memory management unit, as well as other existing planned peripheral chips. It costs $220 in quantities of 100 upwards, but the company expects the price to drop to the $20-$60 range by 1985. NatSemi is not publicising its first customers.

The company claims to have the first commercially available monolithic full 32-bit microprocessor on the market. Zilog, however, has already released the specifications for its Z80000 32-bit chip and, according to Peter Brill-Edwards, of Zilog UK's applications division, samples will be available next month, with volume production expected by the second quarter of next year. By then it will also be supported by the 8070 floating point numerics co-processor and the Z800 processor.

In addition, Intel's iAPX 432 chip has been available for over two years, although it is not code-compatible with the Intel 16-bit family, and NCR's full 32-bit four chip set has been available for a year.

Hewlett-Packard and Bell Laboratories both have full 32-bit chips, although they are intended only for use in those companies' products.

A spokesman in the US for rival semiconductor manufacturer Motorola confirmed that Motorola has no plans to advance the launch of its 68020 full 32-bit chip, scheduled 1984's first quarter.

"We could have modified a 68000 device and called it a 32-bit chip," he said, "but we are looking for an order of magnitude of performance. We are looking for a processing speed of 3-4 mips and don't plan to tamper with our realistic schedule to bring in a truly next generation device."

Intel's iAPX 386 chip, a 32-bit version of its 8086 architecture, is due next year.

National Semiconductor's 32032 has resident support for several operating systems, including Unix, Concurrent CP/M-16, Idris, BLMX-16 and others, via the existing NSX-16 cross support package, and it will run several high level languages, including Pascal and C.

By March 1984 the company expects to launch a development board to provide evaluation and developmental capability for key 16000 family peripherals.

Move to cut chip import duty begins

by Caroline Burgess

REDUCTION of import duties on semiconductors to bring them into line with those on microcomputers has been recommended by a National Economic Development Council tariff working group.

The recommendations are expected to be endorsed by the Electronic Economic Development Council, and from there they will be passed to the government. It will then be up to the government to press the EEC for the changes.

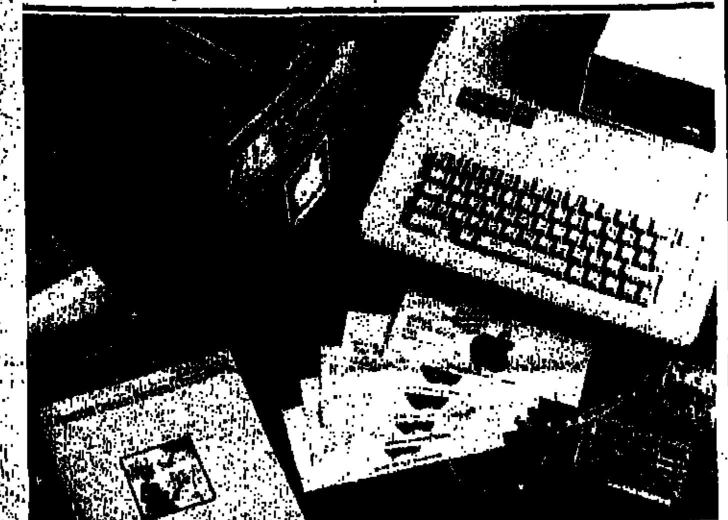
The move was claimed as a major victory by the British Microcomputer Manufacturers Group, which has been campaigning for the changes for the last nine months.

Nigel Smith, vice-chairman of the BMMG, said: "The government now has a clear mandate to lobby the EEC." Representatives of the BMMG are due to meet Kenneth Baker, Minister for Information Technology, in January, "and, if nothing has been done we shall want to know why," said Smith.

The present import duty on semiconductors is 17%, but the duty on microcomputers is only 6%. According to the BMMG, this gives an unfair advantage to foreign microcomputer manufacturers.

The new recommendations call for an immediate reduction from 17% to 9% and a further drop to 6% within the next two years. If the recommendations are implemented the BMMG claims it will have achieved one of its most important aims.

Another aim of the BMMG is to amend the regulations for patents and trademarks. At the moment companies have to register in every country individually, causing long delays and extra costs. It would like to see an EEC patent and trademark.



The Apple professional home computer.

Apple brings system home

by Caroline Burgess

APPLE has put together an Apple IIe system specially for business use at home. Included in the price of £999 is the 64K processor, disc drive and controller, plus a package of extra goodies to tempt buyers.

"We are looking at the top end of the consumer market," said Neil Davison, Apple retail market development manager. "Many home computer users are looking to move up from cassettes to disc-based machines.

"People using Apple at work now want the benefits at home. But we are not seeking to sell to the naive user," said Davison. "It is our response to growing numbers of personal computer users who want a business standard machine for home use."

Also included in the systems is a television adaptor and vouchers worth up to £320 off other Apple products to encourage users to extend the system, user guides and *Windfall*, Apple user magazine.

The system is available now through major retail outlets and dealers.

Micro News is compiled by Robert Parry

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SOFTWARE FILE

Small UK house takes on market leaders

A SMALL London software house plans to launch its office software in the US in competition with such mighty market leaders as MSA/Peachtree.

Graffcom, founded by Welsh brothers Robert and Richard Owen, is to introduce a new micro office suite called O-Man (Office Manager) at Compec next month. O-Man will provide word processing, graphics, financial planning, spreadsheet, information retrieval and other facilities which can be integrated with Graffcom's accounting programs.

A US agent is now looking at ways of distributing Graffcom's products throughout North America. And Robert Owen plans to increase its list of regular UK dealers from 30 to at least 50 by Christmas.

Graffcom was set up in 1977 at the start of the micro bonanza, originally to manufacture a desktop machine – a venture that never took off. Instead Owen shifted the emphasis to software and developed an accounting suite, ISBS (Integrated Small Business Software) for eight-bit machines. It was one of the earliest adherents of the CP/M operating system.

ISBS was converted last year into 16-bit format and now runs on IBM, DEC, Sirius, Xerox and Apricot micros.

The 20-strong team, which has been doubling its income steadily year by year, and ploughing back profits into research, expects to turn over about £750,000 this financial year.

Graffcom has a five-year contract with DEC to provide software for its Rainbow machine and was awarded DEC's silver plaque for quality programming.

MICKLESON . . . "We started right from the bottom."

Sensible joins the database fra

by Claire Gooding

ANOTHER micro database has arrived from the US to do battle for its share of a lucrative market. The Sensible Solution, which originated with Washington firm O'Hanlon Computer Systems, is challenging the likes of Ashton Tate's dBase II, Compsoft's DMS and Delta, and top-of-range systems like Logica's Rapport and MDBS.

The Sensible Solution started as a "language", devised by Philip Mickleson of O'Hanlon, who got his ideas from the first mainframe relational database, Nomad.

Mickleson, a self-avowed assembly language enthusiast, experimented with Ashton Tate's dBase II, and found it wanting. He and his partner, Pat O'Hanlon, were developing a huge suite of business programs, and were looking for a central tool which would help them develop portable applications.

They didn't find one.

Starting with mainframe systems as a reference, Mickleson wrote The Sensible Solution, and came up with a product so advanced, he says, that even Ashton Tate in the US is beginning to feel the bite. The multi-user database is centred around a "data dictionary" approach, which makes it extremely flexible. In action the database looks like an application generator, complete with screen generator, except that it is a good deal faster than most.

Mickleson was in the UK last week to see The Sensible Solution launched in the UK, by Offshore Computing (Sensible Software Division).

"What makes the product unique is its compatibility across a number of micros," he said. "Having written an application in the Sensible Solution language it can be compiled and run with its data on any system.

"We started right from the bottom: all the file handlers, input routines and so on are all written in Assembler, with helpful things like validation. The sophistication of the validation hasn't been matched by anything I've seen yet."

Mickleson believes that The Sensible Solution is far [illegible] most other databases in [illegible] user facilities. He does [illegible] that operating systems [illegible] (Microsoft's Unix) are the [illegible] remove mystery for [illegible] users. "The worst [illegible] terface between user and [illegible] system. Why should [illegible] guage be the operating [illegible]

In the long run, he [illegible] The Sensible Solution [illegible] networks of IBM Personal [illegible] ters and hiding all the [illegible] the MS-DOS operating [illegible] from users. At present [illegible] sible Solution runs with [illegible] CP/M-80, MP/M, DRDOS [illegible] boDOS and MmmOST.

Mickleson is [illegible] rewriting the database [illegible] Unix, as Ashton Tate is [illegible] to be doing with dBase [illegible] go from fast to slow! We [illegible] ing for a C compiler [illegible] At the moment there's [illegible] do it."

Offshore Computing [illegible] the database for £695 [illegible] price meant to reflect [illegible] tive sophistication of [illegible]

Drive is on to automate wary estate agency market

by Philip Hunter

TWO software companies are launching sales drives in the hope of kindling the long-predicted boom in demand for office automation from estate agents. Blue Chip Microsystems, of Yeovil, has made the standard move of appointing a London distributor for its Orion series of estate agents packages.

But Sydney Development, the UK arm of Canada's biggest independent software company, has taken a different approach by recruiting estate agents to sell its property management system.

The market for estate agents' office automation systems has a potential value of £200 million and should at last begin realising this potential, according to a recent study by London business consultant James Morrell Associates.

A shortage of private housing will force up prices and produce increased competition among estate agents, according to Professor James Morrell, director of the firm of consultants.

Office automation will help estate agents to be more competitive by cutting administration costs and enabling them to lower their commissions.

But at present less than 1% of the UK's 18,000 estate agents are computerised.

According to Blue Chip's chairman, Philip Tilson, estate agents have become wary of computer systems because they have been victims of exaggerated claims for cheap micro-based systems.

The Blue Chip [illegible] allows an estate agent [illegible] customer requirements [illegible] tween 200 and 1,500 [illegible] depending on the [illegible] system chosen.

Sydney has gone for [illegible] buted network approach [illegible] offering.

It can now run on [illegible] different micros.

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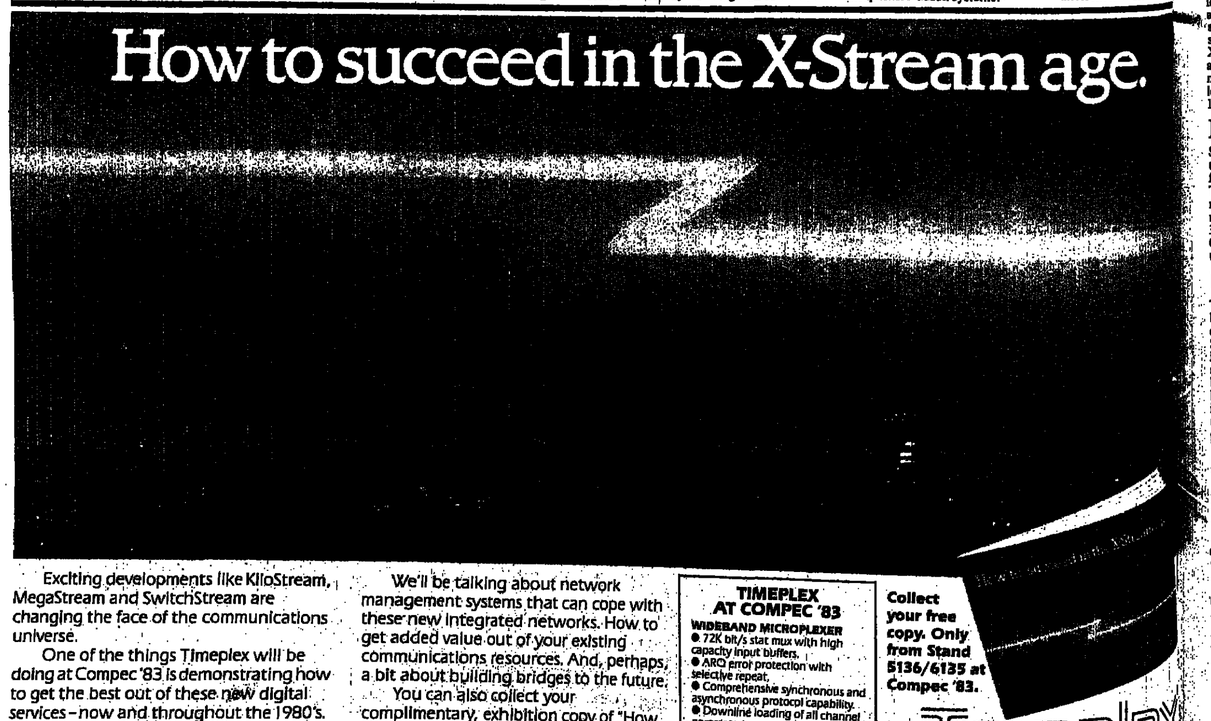

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SOFTWARE FILE

Firms link to sell to Australia

by Claire Gooding

IBM micro software house Peachtree Software has joined forces with Compact Software International to sell accounting packages in Australia. The agreement is predicted to be worth about 500,000 Australian dollars to Compact, whose accounting packages will be sold through the dealer network set up by Peachtree.

The two-year agreement covers Australia, New Zealand, and the South Pacific Islands. Compact also sees the Australian market as a promising back door to Japan, because the Japanese sell a lot of hardware to Australia as a testing ground for new models.

Compact's famous application generator, Nucleus, is not covered in the deal. But ties with Peachtree were already close, because Compact's products use Peachtree's Miksam file handler, which is built into the accounting packages. These include sales, purchase and nominal ledgers, stock control, sales, invoicing and order processing systems.

All the packages were developed in Compact's office in Dorking, Surrey, but the company's ties with Australia led it to set up a subsidiary headed by Dell Bronson, whose husband is Compact UK managing director, Peter Bronson.

Dell Bronson said: "We've created a dealer network and, from experience, we know that a central contact point is needed for each State, because it's such a huge country."

Unix recruits

TWO major OEM suppliers in the DEC field have followed DEC's lead into the Unix market. Dicoll and Thame Systems have both signed deals with Logica, UK supplier of Microsoft's Unix-based Xenix operating system. Dicall and Thame will use Xenix on micros: a DEC personal computer lookalike from Dicoll, and an LSI-11 based machine from Thame.

Into the race

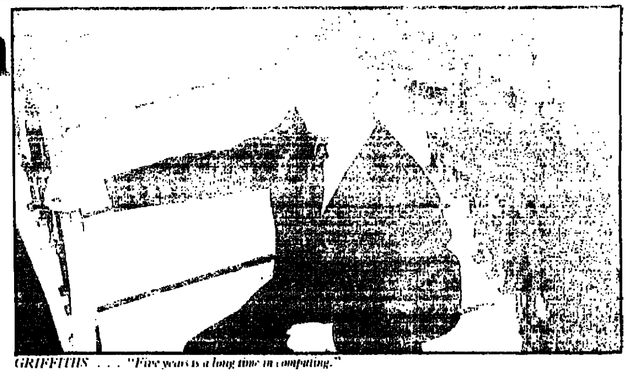
STC Business Systems has joined the race to supply micro to mainframe links by releasing its File Transfer Protocol. It is a communications program that links STC's multi-function workstation, the 3290, with software running on the CP/M operating system from Digital Research.

Book language

THE movement of traditional book publishers into software distribution has another recruit. Springer-Verlag, best known for its international publishing of scientific, technical and medical books and journals, will be handling the Oodula-2 language, selling it worldwide through its traditional retail channels. The language was written by Pascal author Niklaus Wirth for the Apple II and IIe, and has been implemented by Volition Systems, Springer-Verlag's partner in the enterprise, for the IBM Personal Computer and the Sage II and IV computers.

Software File is compiled by George Black

Rivals clash on Coral compilers



GRIFFITHS . . . "Five years is a long time in computing."

A ROW has broken out between developers of the real time programming language Coral.

Data General has belatedly got itself a Coral compiler to try to carve out a slice of the real time systems market. For the past few years that market has been dominated in this country by rival US supermini maker Digital Equipment running Systems Designers' Coral on its Vax machines.

Now Data General has developed its own Coral compiler in a joint project with small Basingstoke software house Albetros, whose marketing director Hugh Griffiths claimed that its compiler was one-third faster running on Data General's 16-bit Eclipse than SDL's on the 32-bit Vax. He added that Defence Ministry benchmark tests had confirmed this.

And the firm's head of development, Richard Berkin, said SDL's product was still not a complete implementation of the language.

But SDL company director Ian Wesley dismissed Albetros' assertions.

"One should take any competition seriously, but we honestly believed everyone else had given up the challenge in this area," he said. "We're now on our 36th version of Coral and 1983 has been a record year for us. Of course you can get faster compilers, if they do less checking.

"We would not be interested in writing a Data General version."

Both parties, however, agreed that Coral had at least a five-year lifespan ahead of it before the US Defence Department language Ada made it obsolete. SDL is itself involved in Ada development, but Wesley argued that the new language would not become dominant until the 1990s.

Griffiths concurred, adding: "Five years is a long time in DP."

Data General has paid half the development cost of the new Coral compiler and will put its salesforce behind promotion, while Albetros provides a support team of eight people.

The first customer for it is Marconi Avionics, which has been using Albetros' other software for several years.

The partnership expects to net about £1 million from the sale of Coral compilers over the next five years.

The recent news that the intended standardisation of Ada has run into trouble in the US helps to bolster Data General's hopes of pocketing big profits from Coral.

Though its use will primarily be in the defence sphere, Albetros thinks coral will continue to be used for civilian control systems and could prove a successful export for applications such as power stations.

Mathematica demonstrates in the UK

MATHEMATICA, developer of the popular Ramis-II fourth generation language, this week opened a product demonstration centre in London. The IBM systems specialist is promising a more aggressive approach to marketing after its takeover earlier in the year by the US corporation Martin Marietta, which stands just outside the world's 100 largest firms.

The takeover makes it a sister of the British systems house Hoskyns and the new demonstration centre will also be used as a shopwindow for Hoskyns' products.

"There is a great potential for synergy, though the two organisations will remain autonomous," said Mathematica UK sales manager Andy Wilder.

The centre should assist it to counter recent promotions for rivals in the fourth generation language field such as Sperry's Mapper and Cincom's Mantis.

Meanwhile Martin Marietta Data Systems president Rick Walters, who is now also Mathematica's president, is believed to be still on the lookout for stable partners for his two software catches. The choice of Mathematica followed investigations into Cullinet, Information Builders and ADR; but it is still unclear what led the Marietta bosses to their final decision.

Ex-ICL man Ian Gordon, recently promoted to vice-president for European operations, is overseeing an expansion of the Ramis-II empire on this side of the Atlantic.

A new English language-like front-end, boldly called English, is now on trial in the US and is to be introduced in this country before Christmas.

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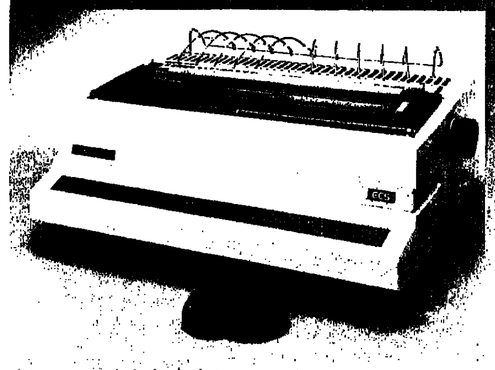

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COMPANY NEWS

Logica has share price problems

HUGHES . . . "Hope of attracting publicity and investment."

by Philip Hunter

THERE is little doubt now that Logica's public share offer will be over-subscribed. Chairman Philip Hughes admitted last week that the company had deliberately gone for a low tender price, in the hope of attracting publicity and investment by becoming an instant hit on the Stock Exchange.

But at the same time, Logica's directors are faced with the dilemma that they may have gone for too low a price or that the share issue may be affected by the recent performance of other companies like Acorn, which recently had disappointing results.

Logica is offering 10.4 million shares, representing 30% of the total capital, to the financial public at 140p a share. This gives Logica a market value of £49 million, a rather low figure, given that the turnover was £42.2 million for the year ending June 30 1983.

Looked at another way, this puts a value of £30,000 on each of Logica's 1,600 staff, a low figure for a software house.

Hughes says that two thirds of the public share issue is coming from existing shares owned by institutions and staff. The other third is coming from new shares, which means that only £5 million of the £14 million raised from the issue is new money. About half of this will be used to pay off the company's bank overdraft, leaving about £2½ million for acquisitions and expansion.

According to Hughes the company does not plan to enter the consumer market for micro software although there are plans to enter the market for education software with products based on Xenix, a version of the Unix operating system.

Xenix is implemented on the BBC microcomputer, made by Acorn, through an add-on 16032 processor from National Semiconductor due next Spring.

Although Logica is known as a software company, it is the VTS 2200 word processor that has attracted particular interest with brokers.

The product last week won the company the Queen's Award for technology, and has captured 18% of the UK market, and 10% of the French, for standalone word processors. The VTS is sold directly through Logica, as well as through distributors, and by ICL as the 8801.

Software products, including Xenix, account for a third of the company's turnover, but are growing all the time. Banking systems and defence consultancy still make up almost half of the overall turnover.

Hardware sales up for US makers

THE latest round of quarterly results has brought relief for several of the biggest US computer makers, after disappointing performances earlier in the year. Burroughs, Honeywell, NCR and Control Data have all reported higher third quarter profits from their computer divisions.

Profits had sagged in the first quarter ended March 31 compared with the same period of 1982, but all three report higher hardware sales during the second and third quarters.

Burroughs lifted profits by 16% for third quarter up to $42.5 million. Sales went up from $1.02 billion to $1.04 billion. Honeywell did even better with profits up 33% from $43.8 million to $58.4 million with sales up from $1.34 billion to $1.41 billion.

Control Data's overall third quarter profits were down from $57.9 million to $48.9 million on sales up from $1.07 billion to $1.16 billion. But the company's information services division was slightly more profitable than last year – up from $37.8 million to £39.5 million.

The financial services division was responsible for the drop in profits, a victim of lower US interest rates. The story is repeated at NCR, which boosted its quarterly earnings by 40% to $70.1 million.

But all these results are put into cruel perspective by IBM, which seems to put more distance between itself and its rivals with every quarterly announcement. IBM's profits were up 25% on the quarter, from $1.04 billion to $1.3 billion on turnover up from $8.17 billion to $9.4 billion.

The breakdown of IBM's results into hardware sales, hardware rental and income from services, does, however, have a similar shape to its rivals even if the figures are different. In all cases rental revenue is falling and income from hardware sales rising.

IBM had a huge 40% lift in equipment revenue, to $5.29 billion. But this was partly offset by a 19.7% drop in rental revenue from $2.77 billion to $2.22 billion. IBM's rental revenue has in fact dropped in every quarter since March 1982.

The same is true at Burroughs, with sales revenue up by 4%, and rental revenue down 9% for the quarter.

Lotus is first US software firm to go public

by Bohdan O. Szuprowicz

DURING the first week of October, Lotus Development Corporation became the first of the new breed of microsoftware companies to go public and its immediate performance in the aftermarket augurs well for a whole new group of leading microsoftware firms that are expected to go public in the months ahead. Lotus came to market with 2,600,000 shares at $18 each which rose to over $24 during the first trading day.

The overall market for microsoftware is now estimated at $2.1 billion and expected to increase rapidly to almost $12 billion by 1988 so there appears to be a lot of room for growth and profit for entrepreneurs and investors alike.

But this may be deceptive because unlike high technology hardware manufacture, just about anyone with a microcomputer can get into the microsoftware business and the competition in this game is probably more intense than in any other high technology sector.

In mid-1983 it has been estimated that there were already at least 5,000 major microsoftware products on the market supplied by about 200 manufacturers. That however, is only the tip of the iceberg, accounting for only the most visible and best-financed suppliers.

At a recent meeting of the Association of Data Processing Service Organizations (ADAPSO), one microsoftware executive pointed out that his company started a head count of microsoftware firms in North America and it just simply gave up after reaching 11,000 with no end in sight.

What this means is that the average revenue of microsoftware firms is a mere few hundred thousand dollars per year, and while the industry is booming, individual firms with prospects of rapid and profitable growth are few and far between.

A recent study of ADAPSO also reveals that average revenue per employee in a microsoftware firm is just over $53,000, only about half as much as mainframe and minicomputer software companies used to get.

At the same time, microsoftware firms spent almost 50% of their revenues on salaries and are constantly scrambling to find new talent as their employees move to better paid jobs with competitors or just start their own microsoftware businesses.

It is important to discriminate when investing in the microsoftware industry, which despite the pitfalls, nevertheless presents some quite unusual investment opportunities. Several leading microsoftware companies that represent the latest concepts and are well financed are certainly worth considering.

Just make sure that their products include integrated microsoftware packages that combine financial spreadsheets, wordprocessing, graphics, and data base management in a single "user-friendly" system.

Also to be watched are firms getting into telesoftware, bypassing the conventional microsoftware distribution channels and keeping the lion's share of the proceeds to themselves.

A recent survey in *Software News* identified 25 software companies, whose revenues have grown by over 50% during 1982. Among those firms there were eight companies growing at over 100% and five of those were new microsoftware firms such as Softsel, MicroPro International, Ashton-Tate, Digital Research, and Microsoft.

Other microsoftware firms which did not make that list but whose products are among the top 25 bestsellers include Visicorp, Continental, Borderbund, Software Publishing, Sorcim and Stoneware.

Ashton-Tate is probably of immediate interest because it is already in registration with 700,000 shares of stock expected to be offered at $16 per share by Alex Brown & Sons during October. The company specialises in cross-industry microsoftware and its relational data base management system is the third best-seller package after Visicalc and 1-2-3 system, which gave Lotus its leading edge in this market.

But the leader of the pack with an impressive growth in revenue of 353% during 1981-1982 is Softsel, the largest independent distributor of microsoftware packages. It expects to double its revenue to about $70 million in 1983. The company also received at least $11 million in venture capital and looks like a prime prospect for going public very soon. Only extensive teledelivery of software directly from producer to end-user threatens its future.

The telesoftware business may well develop as a means to protect the microsoftware manufacturers from extensive piracy and loss of revenue but this may also affect microsoftware distributors. The problem lies with a rapid increase in the number of microsoftware rental outlets who rent packages to end-users for a fraction of the cost and who in turn illegally copy the software on their microcomputers.

Another company, the Vault Corporation, is also developing "finger printing" of floppy discs which contain software which prevents their use when copied to blanks without print on.

MicroPro turned up as the second fastest growing microsoftware company. Revenues rose by 336% from $9 million in 1981 to over $39 million in 1982 and is expected to reach $50 million in 1983. The company produces the all-time best-selling Wordstar word processing program and since the company is also backed by venture capital it is only a matter of time before it goes public.

Digital Research is a leading manufacturer of microsoftware operating systems without which applications programs cannot run. Its revenues have grown at almost 160% to $22 million in 1982 and it expects to reach between $30 to $40 million in fiscal 1983.

Microsoft, also competing in the operating microsoftware business, is particularly well positioned as a supplier of IBM personal computer operating microsoftware, and developer of an increasingly popular Unix-based system for microcomputers of all types. It has grown at about 120% per year recently and should double to about $50 million in fiscal 1983.

MSA battles in applications software sector

by Philip Hunter

MICROSOFT and Digital Research have already established themselves as market leaders in system software for micros. The battle to establish similar dominance in applications software is only just beginning, with several of the large US software houses making preliminary moves.

One of the best bets to lead the market is Management Science America (MSA), which already has a big slice of the market through its subsidiary Peachtree Software.

MSA took over Peachtree in 1981, and has now made its second move in microsoftware by taking over Edu-Ware Services, US specialist in education software.

But this is just the beginning. MSA is sitting on $80 million cash, and the recent acquisition left plenty of change from the interest alone. Wall Street analysts are predicting a flurry of takeovers by MSA in the microsoftware world in 1984.

Wall Street punters could do a lot worse than buy shares in MSA, because analysts are only just beginning to wake up to the company's potential, and are revising upwards growth forecasts to take account of the expected action in the microsoftware market.

The purchase of Peachtree could not have been better timed, coming just as the company was entering the IBM Personal Computer market with a range of accounting software.

MSA is certainly among leaders in the race for supremacy in the small business and computer software market, but does not walk alone on the acquisition trail. Cullinet recently bought the small games specialist Computer Pictures, and ASK Computer, which deals in manufacturing systems for minis including and Hewlett-Packard, has made a similar move by acquiring Software Dimensions.

MSA, Cullinet and ASK all have full piggy banks after coming with stock issues in the recent market on Wall Street. Cullinet has $45 million to spend, but many fancy MSA's chances because it has the most cash, and an established distribution through Peachtree.

Microcomputer software is the preserve of the small product company, as can be seen by perusing a software catalogue for the IBM PC. But a recent report from a prominent firm of Wall Street analysts captured the prevalent mood by predicting a shakeout.

By 1986, the market will be dominated by just a few large product companies, says the report. But not everyone will agree with this conclusion. UK MicroFocus has demonstrated how to grow big on a limited by hitting the market early did with its CIS Cobol for all

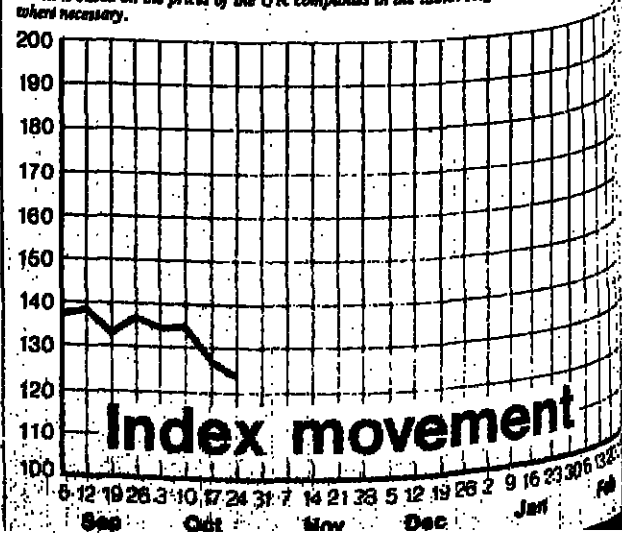
SHARES TABLE

The shares table, which is specially compiled for Computer Weekly, ... selected computer companies that reflect the state of the computer industry

Date 21/10/83 Index 123.86

Pence 1983 High	Pence 1983 Low	London Stock Exchange Stock	Pence Price	Pence C'nge	$ 1983 High	$ 1983 Low	US Stock
326	277	Abingworth (10p)	282	+1	29	16¼	Amdahl
646	240	ACT (App Com) (25p)	336	-20	60	20¼	Apple Inc
276	246	Atlantic Comp (10p)	276	–	60	34¾	Auto Data Pro
88	41	B. Bov Kent (25p)	68	-6	67¼	43¼	Burroughs
193	124	Chubb (20p)	140	+2	16	7½	Comp Auto
176	116	Cole Group (25p)	118	-4	23	17	Comp Science
400	162	CASE (20p)	340	-30	14¼	9½	Comshare
250	200	DPCE (5p)	223	–	67½	38¾	Control Data
253	173	Datastream (5p)	180	+7	61	37¼	Cray Research
666	540	De La Rue (25p)	645	-17	61¾	41	Data General
378	284	Extel (25p)	373	–	27¼	18¼	Datapoint
669	411	Ferranti (50p)	549	+3	127¾	67¼	Digital Equip
248	183	GEC (5p)	188	+3	41	23½	Elec Data Sys
92	55	ICL (25p)	55	–	15¾	5¾	Gen Automation
83	41	Kalamazoo (10p)	58	–	43¾	19¾	Gould
375	276	Kode Int (25p)	316	-20	61	38¾	Harris
626	270	Memec (10p)	460	-46	48	37	Hewlett-Packard
190	130	Muirhead (25p)	140	–	128¼	85	Honeywell
690	468	N'market (1981) (50.05)	487	-36	44¼	20¼	Intel
2700	967	Norsk Data	2262	-738	133¾	95½	IBM
320	207	Office & Elect (25p)	216	-5	71¾	64½	Litton Ind.
1236	710	Philips Lamp (F1 10)	1084	+44	17¾	12¼	MDS (Mohawk D)
266	178	Plessey (25p)	186	-7	32¾	18	MSA (Mgmnt Sci)
50	18	Quest Auto (10p)	20	-2	16½	9¾	Mngmnt Assist
297	184	Racal Elect (25p)	193	+9	16	9	Modular
320	226	Star Comp (10p)	258	+3	148	84½	Motorola
610	276	Systems Des (10p)	480	-5	67	26¼	National Semi
222	214	Telemetrix (5p)	216	-6	133¼	87½	NCR
619	418	Thorn-EMI (25p)	587	+8	38½	24	Perkin-Elmer
177	122	UC&T (50p)	122	-6	28½	15	Prime
167	130	United Leasing (20p)	157	-8	59¾	44½	Raytheon
		Unlisted Securities			37½	26¼	Signal
118	107	Acorn (1p)	107	-7	47	33½	Sperry Comp
128	75	Bus Comp (10p)	76	-6	24½	16¾	Storage Tech
130	97	CPU (5p)	108	-2	36¾	24¾	Tandem
180	118	Cifer (10p)	125	-8	62¼	36¾	Tandy
610	146	Consult (C&F) (10p)	460	+30	171	108¾	Texas Inst
276	197	Feedback (10p)	262	-3	26½	16½	Tymshare
314	125	Imm Bus Sys (10p)	139	+13	40¼	31¼	Wang Lab B
216	166	Int'europe Tech (20p)	206	-4	17	9½	Wyly
54	27	J.S.D. (5p)	36	–			
86	70	M.M.T. (5p)	80	–			
300	160	Memory Comp (fr10p)	240	-6			
628	206	Micro Bus (10p)	460	-20			
640	266	Micro Focus (10p)	630	-10			
446	310	Microgen (10p)	390	-15			
227	136	Miles 33 (10p)	213	-10			
84	23	Mnemos (10p)	33	-2			
240	164	NMW (£1)	190	-12			
316	170	Real Time (5p)	216	–			
120	81	Rolfe & Nolan (10p)	112	–			
197	66	ScanData (10p)	96	-20			
96	78	Tech for Business (10p)	83	+3			
80	63	Trident Comp (10p)	63	-4			
107	66	Zygal Dyn (5p)	66	–			

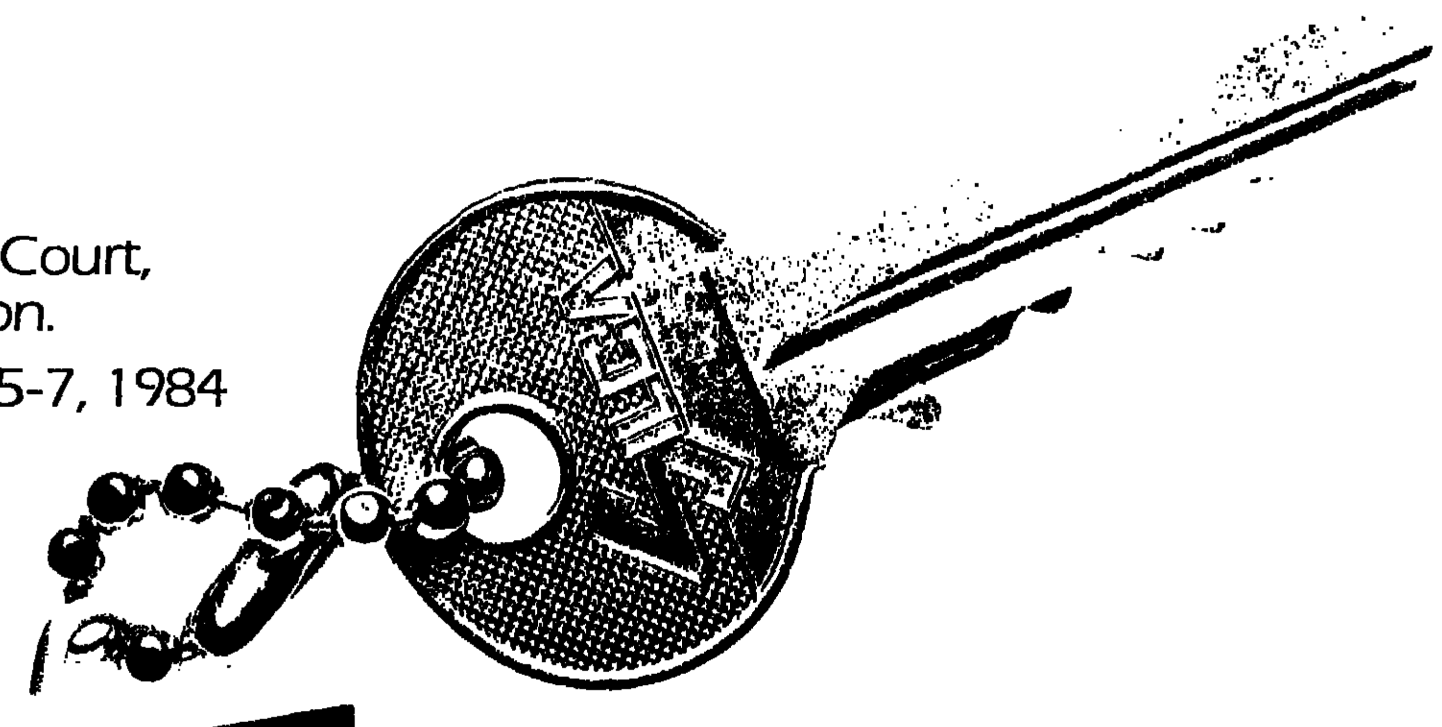
The table shows the closing prices in London on Friday and in America on Thursday. The Index is based on the prices of the UK companies in the table. Highs and Lows have been adjusted where necessary.



[صورة من الأصل]

[THE KEY ✱ TO SUCCESSFUL SOFTWARE SALES]

Earl's Court, London.
June 5-7, 1984



software '84
EXHIBITION AND CONFERENCE

Certainly the major software event of 1984 will be **Software '84**, to be held for the first time in Central London. **Software '84** will be totally dedicated to professional software sales and will be held from 5-7 June 1984 at Earl's Court in the centre of London, the Nation's biggest commercial market place.

Such a show could only come from a company that understands the computer market. Reed Exhibitions, the country's largest exhibition organisers, will be staging **Software '84** with all the skill the company has already brought to the highly successful Compec shows.

Computer Weekly and Software* will be sponsoring both the exhibition and the prestigious conference, running at the same time, guaranteeing a high level of interest in both events.

Inevitably, top quality business visitors will be drawn to such a show, with DP professionals, dealers, OEM's and serious business and professional end-users all visiting the exhibition with nothing but software purchase at the forefront of their minds.

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software '84
EXHIBITION AND CONFERENCE

[هكذا من الأصل]

PROFILE

Man who finds spreadsheet success as easy as 1-2-3

KAPOR . . . *"One day I said 'Enough!'"*

MITCHELL KAPOR bought an Apply Computer five years ago. He didn't know, he says, for what.

But he not only thought of something to do with it – he managed to do it much better than so-called expert programmers. He now heads one of the most promising micro software firms of the 1980s.

Kapor is president and founder of Lotus Development Corp. Lotus is the company which crept up behind all those other purveyors of spreadsheet and planning programs and surprised them with Lotus 1-2-3, the program that swept the 16-bit market in the US and is now making inroads in the UK.

Kapor graduated from Yale with a master's degree in psychology. He has a "dormant talent" for mathematics, and a fascination for microcomputers.

"I held off for a while because I'm good at wiring bits and pieces together," he said. "But once I got going with the Apple I found it so captivating that I became a consultant in the wild and woolly days of the pre-Visicalc era."

Kapor started with a modest statistics package on the spreadsheet principle. But when he saw Visicalc he knew it was way ahead of anything he'd achieved. "This, I said to myself, is going to be the standard."

And with a blinding glimpse of the profits to be made, he joined the spreadsheet boom.

Luckily he knew the authors of Visicalc, Dan Bricklin and Bob Frankston, and they introduced him to Personal Software, the company now called Visicorp, which was marketing Visicalc for Software Arts.

Dan Fylstra, who masterminded Visicalc's commercial success, put Kapor to work smartening up his first product.

Perhaps because of Kapor's interest in psychology, the ideas that were triggered off by Visicalc concentrated on the user's lack of expertise with computers. "My talent is in conceiving ideas, rather than writing code. The only language I'm really proficient in is Basic. But I was the first to incorporate the easy-to-use features that

by Claire Gooding

have been adopted by most other products now."

Kapor's efforts at Visicorp produced Visitrend and Visigraph, and taught him that he could make more money with his own company.

Like Software Arts, now on the warpath with TK!Solver, he set out to create his own marketing empire around the next generation of spreadsheets. Lotus 1-2-3 (it gets its name from being as easy as 1,2,3) crystallises Kapor's ideas on making computers simple to use.

Lotus 1-2-3 happened because Kapor got frustrated with the limitations of Visicalc itself, and 16-bit hardware came along just in time to be useful. "One day I said, Enough! I have fiddled around with this long enough getting this out. What I really want is a graph command in Visicalc. So why not have such a thing? Everyone wants their software to be integrated, after all."

Kapor and his team started from scratch, aided by the timely announcement of the IBM Personal Computer, and a million dollars of backing.

It took him four months to get the money, and in April 1982, Lotus came into being.

Kapor put his marketing machine in order with a further $3.7 million last December, and applied the lessons learnt at Visicorp to great effect. "Part of it was making sure the product was available when we said it would be. It wasn't a case, as so often, of 'Oop, sorry, see you in 90 days'."

The 1-2-3 package had a "high visibility" launch in the US, with plenty of razamatazz. It arrived a year before its nearest competitor, which Kapor thinks will be Visicorp's VisiOn environment, and was in the right place at the right time to become beloved of the IBM PC community in the US.

Marketing, says Kapor, is the vital part of the success. The hardest thing he ever had to do was fire his second-in-command at Lotus who didn't see eye to eye on how to do it.

He is certain, though, it was the right thing to do, as was changing his company's name from the "real clunker of a name", Micro Finance Systems, to Lotus, suggested by an employee as part of a name-finding competition.

Kapor attributes his market sensitivity to the fact that he didn't have a fixed point of view inherited from computer science or DP background.

"I didn't have a particular point of perspective because I never really came out of the lab. What I'm interested in now is building a company. I've already built a successful product."

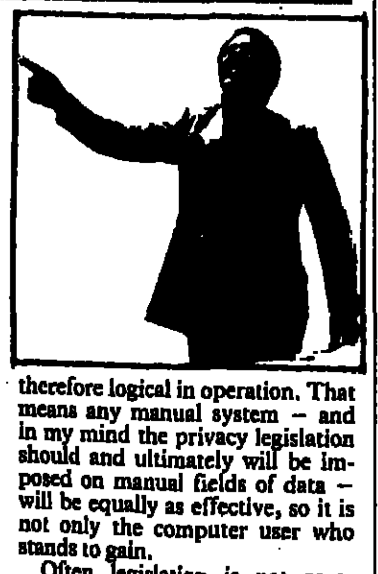
Lotus has now grown to a firm of 220 people, and Kapor sees himself as a sort of orchestral leader.

He came in person to see 1-2-3's UK launch. And he's already thinking about where to go next. "If we stand still lots of people will go past us. And its harder to hit a moving target."

PLATFORM

Tim Southern is managing director of the Human Resources Division of Package Programs Limited.

DP people must be brought into the computer law-making process



FRANKLY, I am becoming increasingly alarmed by comments made in the Press and elsewhere about the privacy legislation currently going through Parliament. It is not that I consider protection of data a bad thing, but our legislators once again have no idea of the impact of their legislation, particularly in the computer field.

Despite assurances that all interested parties have been consulted and their views taken into account, the very woolliness of current thinking indicates otherwise.

The last piece of legislation which affected computers was SSP (statutory sickness payments). The objective of SSP was to get rid of civil servants by delegating payment of sickness benefit to the employer. The directive of how this was to be funded was not clear until very late in the forming of the legislation – ie, whether there would be a full refund for payments or whether it would be funded out of a rebate of the employer's contribution to National Insurance.

Originally the idea was a National Insurance rebate. To protect their interests, employers suggested three band rates.

Ultimately the full refund of SSP payments was agreed. But the compartmentalised minds of the Civil Service kept the anachronism of the three band rates to which employers originally agreed to reduce their net liability, but which would result in extra adminstration cost.

In this and other procedures under the legislation, the result was that all the worst aspects of the proposal were included.

Cynics might say that the DHSS made the legislation complicated so that it took more staff to administer and police and the net reduction in manpower would be as small as possible.

Other elements of the SSP legislation also demonstrate its woolliness – for example optimisation schemes, by which employers can use loopholes in the legislation to make money out of the SSP rules. These are to be outlawed in the next session of Parliament as they go against the whole spirit of the legislation.

These and other problems could have been eliminated if the DHSS had come to the industry with clear objectives and been open-minded enough to involve the DP experts in the field. At worst, the DHSS could at least have had experienced computer personnel in the legislative team – which they have admitted they did not.

Woolly legislation is not new to the DP professional. There are a number of anomalies in other DHSS legislation which have an impact upon computer systems, such as National Insurance.

There is no reason for the privacy legislation, which, let's face it, only applies to the DP industry, not to be explicitly drafted. Before this can be done, however; absolutely clear and unambiguous terms of reference, directives and objectives must be set down by our political executive.

Alexander Sandison, in an earlier Platform, succinctly identified those areas of concern which should be legislated upon without cluttering it up with unnecessary detail. Abandon the register and apply the laws of libel to publication to any third party of computer-held defamatory information, he said.

Make file-breaking a criminal offence, in common with safe or house-breaking. Make misappropriation of information from files a theft and consequently subject to action.

Be specific on the rights of individuals to know what is said about them in computer files.

And rather than appoint a registrar, create an Ombudsman to supervise data protection.

We are in danger of being saddled with yet another quango that will cost the taxpayer a great deal of money to establish and administer, with little prospect that the overall objective – to provide a means of controlling unauthorised disclosure of confidential information held in computer files and to make sure that the subjects of that information have the right to check its accuracy – will be achieved.

Certainly the approach of creating a central register of organisations using so-called "personal data" in computers promises to be unwieldy and probably unworkable.

The legislature must involve DP practitioners if it is to produce efficient and effective legislation. Only with attention to detail will a properly thought out computer system be explicit in definition and therefore logical in operation. That means any manual system – and in my mind the privacy legislation should and ultimately will be imposed on manual fields of data – will be equally as effective, so it is not only the computer user who stands to gain.

Often legislation is not completely right first time. Involving the industry at a point in the specification of the detailed legislation can eliminate a lot of the problems and corrections for the future.

It is not too late to re-think the Data Protection Bill, even at this stage. Why not take the opportunity to avoid potential difficulties that are so apparent? As in medicine, prevention is much better than cure.

Tim Southern

Liveware File by Don

DOWNTIME

Blue Ken shocked at revelation

ONE of the lesser known... Blue Ken, the popular and ... sonable Minister for Information Technology, is to look after ... Street. This, he tells me, ... thankless task, given the ... known difficulty not so new ... plementing modern technology.

But he still looks to newspapers outside Fleet Street, without the same union problems (such as technical journals), to point the way by introducing word processors and computerised typesetting. You can imagine his disappointment when he learned of the record of *Computer Weekly*.

His avuncular jowels opened in astonishment when I told him ... reporters of the world's ... computer newspaper were ... they got their hands on a ... typewriter.

But there is surely no excuse ... Ken's next move, when he ... me by the neck and bounced ... opprobrium.

IBM cheque that bounced

A NEW recruit to IBM, in an outlying part of its empire ... fied, did not know that ... issued by the firm could ... cashed internally, but had ... taken to a bank in the ... world.

When he took his cheque ... office finance department ... ing, therefore, the cashier ... "Sorry, sir, we don't cash cheques here."

Undaunted, the youth ... back quick as a flash: "... some doubt about it the..."

Oh, cod

AS part of his call for a Minister ... Communications to boost ... semiconductor industry, ... top boffin Sir Ieuan Maddock ... last week: "There are just as ... reasons for having that Minister (Communications) as a Minister ... Agriculture, Fisheries and Food."

At last convergence is coming to its logical conclusion: and we ... finally look forward to a Minister of Fish and Chips.

No soft sell

HOW about this for a recent TV commercial.

In shot one, Mom and Dad ... waving goodbye to their son ... is off to university.

In shot two, Mom and Dad ... again at the railway station ... look forlorn. The son has ... sent down.

The boy, the narrator ... computer illiterate because ... parents didn't buy him a ... computer when he was ... Thank God for the BBC.

10 YEARS AGO

FROM COMPUTER WEEKLY OF OCTOBER 25, 1973: ... UK computer market had ... slowly, and ranked a poor ... those of West Germany ... France, according to a ... dustrial review . . . ... inaugurated a new range of machines, the Series 90, which was seen as a serious challenge to IBM.

ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, October 27, 1983

The government is still confused

FOR all the government's emphasis on technology as the ultimate saviour of the economy, there is a certain air of disarray about its technology policies.

After nearly five years in government one could expect that the groundwork would be laid, and the way forward clear. But the number of loose ends give cause for some disquiet.

The loosest end, the sale of British Telecom, is probably the most excusable. When the government announced in the last Parliament that it would sell BT to the private sector, it quite rightly put the legislation off until after a future election. The reason was partly because of the enormity of the task; but the government also understood that such a highly sensitive move needed some kind of mandate.

The problem is that elections usually do not give mandates for specific actions; and while the Conservative government has an overwhelming majority in terms of seats in Parliament, it can hardly be said to have the overwhelming support of the electorate.

The action by the telecommunications unions to prevent the sale of BT seems doomed to failure; the government has the will and the Parliamentary votes to push its legislation through. Yet the sense remains that the final result will not be all that tidy.

Other government moves to liberalise telecommunications have met with mixed success. BT certainly reacted quickly to become more competitive. But the licensing process which would allow other manufacturers to sell equipment for attachment to BT networks has been appallingly slow.

The Department of Industry, now the Department of Trade and Industry, is itself something of a loose end. Norman Tebbit, now being tipped as a future Prime Minister, is likely to make some feathers fly in his new job. But whether he can rationalise a policy for an industry department which is almost by definition interventionist, with the non-interventionist stance of the government, is unlikely.

The former chief scientist at the Industry Department, Sir Ieuan Maddock, last week criticised the poor coordination between the Defence and Industry ministries, the British Technology Group, and the Science and Engineering Research Council.

Maddock called for the creation of a new Communications Ministry – an idea floated earlier in the year by Dr Jim Merriman in a report to the Home Office. While the Government has so far given no indication that it would contemplate such a potentially powerful department, it needs to put its views on record.

The government has been responsible for a big shift away from support of "lame duck" industries to the support of the new technologies. There is, however, a strong sense that it resents the amount of money that is going into the new technology schemes. At a meeting earlier this month the government agreed that the highly successful Software Products Scheme would continue – total value of projects being put up for 33% funding is said to be running at £500,000 a day.

There was not, however, any statement about increased funding levels. Was the government too embarrassed to reveal that it was making more money available?

Another item that is high on the government's Parliamentary agenda is the Data Protection Bill. At least the industry hopes it is high on the agenda; has it really taken so long to formulate an acceptable Bill?

Other issues affecting industry are still unresolved. What, if any, is the future role of the British Technology Group? The government has announced that BTG will no longer back new companies, but will instead act as a clearing house between good ideas from researchers and industry.

Tied in with the future of BTG is the future of Inmos, the UK chip manufacturer. Is chip making capacity vital to the future of the country?

A coordinated government voice on the new technologies is needed if they are really to be the building blocks of the UK future. If Tebbit is really leader material, it is time for him to take a leading role at the DoTI in tying up the loose ends.

1984 and all that . . .

This week's example of the strange things people say about computers was sent in by Iris Booker of Reading, Berks, who wins £5.

The cause of Ivan Rowan's trouble with his defective electric grill must be that he, like many of us, is being dealt with by computers, not people. *Sunday Telegraph*

LETTERS

Battle for user-oriented standards

PERHAPS I should explain that my (correct quoted) remark "I'll believe it when I see it" about the IT Users Standards Association does not indicate that I doubt the veracity or good intentions of Eric Howe and John Foote! It was made before I was aware of anything quite so definite as the news you report (*Computer Weekly*, October 13).

If something is now really going to happen this is very welcome.

In another sense, however, I will still believe when I see it that we've got what we really need – which is UK user representatives attending key Ansi committees regularly, and UK sending to ISO meetings all the people that are needed, rather than just those who happen to be able to raise their own funds.

If the IT Users Standards Association really gets off the ground and can ensure that, it will be heartening to all of us who have hitherto been fighting what has often seemed a very lonely battle for more effective and more user-oriented standards.

May I also correct a false impression which may have been gained from your report on Ada standardisation in the same issue? It is true that processing of the ISO standard for Ada is in suspended animation, pending a resolution of the legal problems surrounding DoD trademarking of the name of the language, but that decision was not taken at the Ottawa meeting of the ISO programming language committee (TC97/SC5), nor by that committee. It was taken some time ago.

While the official UK position is that we would prefer an ISO standard to be based on a formal definition rather than the DoD/Ansi document, we supported the SC5 view (unanimous, incidentally) that a working draft based on that document be circulated and voted on as soon as the legal problems are resolved and the green light is showing, with comments meanwhile being sent internally to SC5's Ada working group (WG14).

This seemed the best way to get an agreed Ada standard with minimal further delay.

The legal question of the trademark is only a symptom of the real issue, namely which of ISO Ada or DoD/Ansi Ada would be the "true" Ada if the two should differ.

However, I came away from the Ottawa meeting with the feeling that there was a genuine wish on all sides to avoid that happening – and not necessarily by ISO just having to accept the DoD/Ansi version as it currently stands.

BRIAN MEEK

Computer Unit
Queen Elizabeth College
University of London.

'Give us a painless workstation'

WHY has nobody designed an ergonomic workstation? Drawing boards, typewriters and desks have been around for some time now, so why are VDU stations designed to give operators stiff necks?

The natural viewing angle when sitting at a desk is to look forward and down at an angle of between 30 and 50 degrees below the horizontal.

I have worked in drawing offices for about 30 years, the last five on graphic display systems, and have only found one comfortable working position on any graphics terminal.

This is on a system which has a large drawing board type of digitiser with the VDU and keyboard on a seperate oscilloscope trolley.

By setting the digitiser as a tablet, tilting the working surface almost flat and using a tall stool, I have found a position where I am looking down at the tube face, with my right hand free for the keyboard and my left hand in a natural position to move the cursor and pick up the button menu.

The disadvantage of this is having to look away to the left in order to see the menu and it is often easier to type in commands.

I do often work at a normal tablet station but am never comfortable, and most operators I have talked to have similar complaints of stiff necks or backache.

The arguments about tilted screens giving light reflections is not really valid since screens can be hooded, lighting can be arranged to suit, and in any case, why cannot screens be made with non-reflecting surfaces?

Non-reflecting glass has been around for many years in the picture framing trade.

Come on designers, give us a workstation with an adjustable viewing screen in the same manner as the old-fashioned drawing board.

Just because a VDU uses a CRT it doesn't have to look like a TV.

PETER BRETT

Stanmore
Middlesex.

Psychology and computer science

SO, Radius Computer Services of Hull has successfully employed a Hull graduate in psychology, a discipline " . . . as far removed from computer science as possible" (*Computer Weekly*, October 6).

Yet currently in the Psychology Department at Hull University research projects include a computer-based testing system for pilot selection, an interactive expert system for experimental design analysis, uses of distributed processing in computer-assisted learning and the development of educational software for cognitive skills training.

The Department is contributing to a series of Information Technology seminars to be held this year at Hull University at which well-known national figures will speak on, for example, logic programming, Prestel, the social implications of information technology, man-machine interfaces and the Alvey report.

It is beginning to be recognised that psychologists have a vital role in the development of Information Technology, particularly with respect to human factors. This applies not only to the ergonomic design of peripheral devices but also to the development of software that is compatible with the information processing capacities of the human operator.

Perhaps it is time for a revision of the opinion that psychology ". . . is as far removed from computer science as possible".

J. M. BRENER
Professor of Psychology
University of Hull.

The Editor welcomes letters commenting on subjects published in Computer Weekly, *or on original topics. All letters must be accompainied by the writer's name and address, not necessarily for publication.*

£60 million a year wasted

PURCHASERS of computer systems rarely ask for a specification of their applications and the capacity they require.

We estimate the waste on equipment at £60,000,000 a year and that's for the machinery itself, not the chaos caused when a computer simply cannot perform.

Some cases are tragic. This week I visited a medium-sized firm which months ago spent £35,000 on a new system. On tests we found it took nine seconds to retrieve a single enquiry into just 100 records and the client had 100,000. This was only one of the deficiencies of the system.

Governments protect handicapped people; should not computer illiterates have some protection too? It would not be difficult to frame advice to be issued by an authoritative or official body.

I am suggesting that course to the Department of Industry and Information Technology.

MAURICE R. HAMLIN
Director

Atlas Computer Consultants (UK)
Bolton.

Rainbow software

SEVERAL times over the last few months in opening trade papers and journals I have been surprised to see the same "fact" put forward, that DEC Rainbow has little or no software. John Kavanagh's latest article seems to perpetuate this position.

I would like to clear up matters once and for all. There may not be as many products available for the Rainbow as for the IBM-PC, say, but on our lists alone there are 159 packages. These are only CP/M and CP/M-86.

DEC has been very co-operative in making MS-DOS 2.0 available to *MPI* and we are now working at *moving all the MS-DOS packages* on to the Rainbow.

The Rainbow has not been around for as long as the IBM-PC so you would not expect the number of products to be comparable yet.

We are only one of the large software distributors working on the DEC Rainbow, so I would expect the number of products actually available to be well in excess of those in our catalogue.

BARRY NEIL
Sales Manager

MPI
Barking.

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WORKPLACE

Data communication is just a telephone call away . . .

Fred Jennings of software and systems house Data Logic has prepared a series of reports on networks, called Jensheets, which *Computer Weekly* feels deserves a wider audience. Here is the third report.

The Public Switched Telephone Network (PSTN)

The PSTN is the British Telecom network that people use every day when they talk to each other using the ordinary telephone. It is also a network that is used for data communication operations particularly when a connection between two geographical points is only required for a few minutes or hours per day.

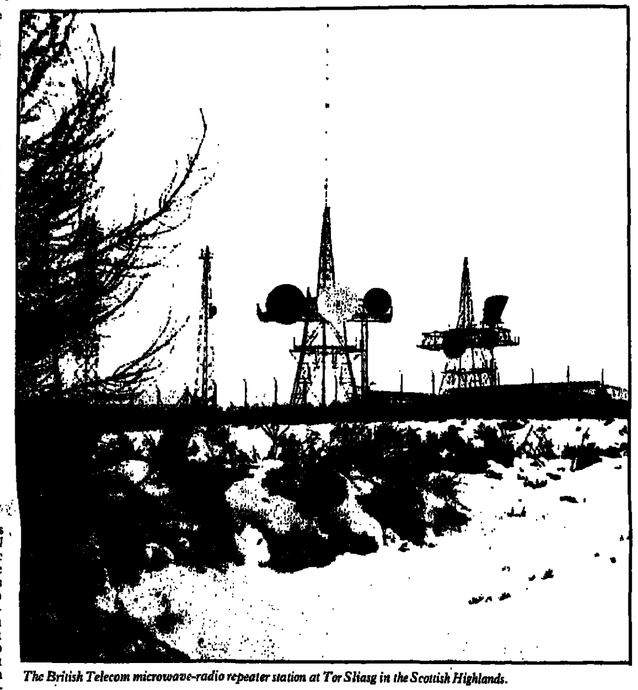
The PSTN connection charges for data communication operations are the same as for normal telephone use. (There is one exception called the midnight line service which is discussed later.)

For each customer there is a cost limit where the annual connection charges for PSTN operation between geographical point A and geographical point B exceeds the annual rental of a leased (dedicated) line. For the customer's benefit this cost limit should be calculated using the standard connection charge matrix filled in with the current connection charges for X, Y and Z.

On new data communications systems there is often no alternative to PSTN operation in the first few months of operation because British Telecom usually takes some time to install new leased circuits. This fact should be considered when modem configurations are being designed.

The line betwen a customer's premises and the nearest PSTN exchange is known as an Exchange Line and this line has a two-wire presentation. All connections through the PSTN are point to point connections, in that geographical point A can make a connection to geographical point B. If A is now to be connected to geographical point C then the first connection must be broken down and a new point to point connection established.

The manual method of establishing a data communications link through the PSTN is for the person at Point A to manually dial the telephone number of Point B. The person at Point B will answer the call by lifting the telephone handset from the telephone and a PSTN connection between Point A and Point B will be established. After conversing to verify that the correct connection has been made, *both persons (at A and B) will each* operate the "data" button on their telephone to switch their modem on to the PSTN line.



The British Telecom microwave-radio repeater station at Tor Sliasg in the Scottish Highlands.

	Cheap	Standard	Peak
	X	Y	Z
Up to 56 kilometres (35 miles)	4X	4Y	4Z
Over 56 kilometres	12X	12Y	12Z

Instead of manually dialling the connection for a data communications link, a computer can be used to dial its own connection(s). This is known as auto-call (dial) operation and requires special software and equipment at the computer end.

The equipment consists of a special computer interface (*auto-call interface*) *and a free-standing* auto-dialler unit. This unit provided by British Telecom is called data control equipment No 1A (DEC 1A). Auto-dialler units are also available from modem suppliers (Data Logic CDF).

An auto-dialled call initiated from Point A is usually automatically answered by the terminal equipment at Point B.

A computer (or intelligent terminal) can automatically answer a manually dialled call and this is known as auto-answer operation.

Auto-answering of manually dialled calls is normally performed by:

- A time-sharing bureau using a mainframe computer or a minicomputer system.
- Purpose-built modem equipment. This equipment is used (in the event of a leased line failure) to answer automaticaly a dialled called and establish a PSTN connection for standby working.

Auto-answering of auto-dialled calls *is normally performed by in*telligent terminal equipment. The main use of this type of auto-answer operation is for the collection (after each working day) of data from unattended point-of-sale (PoS) terminals.

The equipment required for auto-answer operation is a standard modem configured for auto-answer operation and a standard 18010 communications interface (part of the auto-answer system). The interface transfers the *modem's V24 Interface signals to the* processor unit of the auto-answer system.

The four V24 interface signals used by auto-answer software are:

- Calling (ringing) indicator
- Data channel received line signal detector (carrier detect)
- Data set ready [DSR]
- Connect-data set to line [CDSTL] or data terminal ready [DTR].

Of these four V24 signals only the last two are mandatory.

There are a number of phases in auto-answering:

- Ready to receive a dialled call (this is known in the US as being "on hook").
- Answering a dialled call and established a PSTN connection. This is equivalent to lifting the telephone handset from the telephone ("off hook").
- Establishing the identity of the answering device.
- Sending or receiving data over the PSTN connection.
- Disconnecting the PSTN connection which is equivalent to replacing the handset on the telephone (going from off hook to on hook).

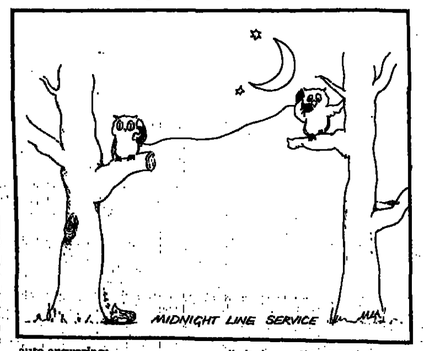
The V24 interface signal known as CDSTL/DTR is used to disconnect the PSTN connection.

This British Telecom service allows a customer to make unlimited use of the PSTN between the hours of midnight and 6am daily for a fixed annual rental per exchange line. To implement this service, British Telecom installs additional equipment in a telephone exchange which disconnects the normal telephone metering during the hours of the midnight line service.

This service was specifically introduced for auto-call operation and is normally used on computer centre exchange lines.

The British Telecom Datel 200 Service provides modems which operate at 600 bps full duplex over a two-wire PSTN connection.

There is a basic principle in telephones which enables tones of different pitch (frequency) to pass along a two-wire connection in different directions without affecting each other.



This principle can best be explained by considering two telephones, one at point A and one at point B connected through the PSTN. If a person at point A whistles a high note through their telephone and a person at point B whistles a low note then these two notes can simultaneously pass along each two-wire exchange line without interfering with each other. This is full duplex operation.

Modems of 300 bps use this principle, except instead of using single notes they use a pair of adjacent high notes and a pair of adjacent low notes. In each pair of notes, one note is used to transmit or receive a binary one, and the other note is used to transmit or receive a binary zero (serial transmission).

Therefore the frequency band of the two-wire PSTN line is split by the modems into two separate transmission paths. One path is used to transmit data and one path is used to receive data.

The word modem means modulator/demodulator ie transmitter/receiver. In the particular case of the 300 bps modem there are in fact two modulators and two demodulators inside each modem. By using one modulator (M1) and one demodulator (D1), a modem can transmit using the low frequency pair and receive using the high frequency pair.

Conversely, by using modulator (M2) and demodulator (D2), a modem can transmit using the high frequency pair and receive using the low frequency pair. Obviously for two modems to communicate over a PSTN link, one modem will use M1/D1 and one modem will use M2/D2.

There is a convention as to which modulator/demodulator should be used at any given time and this is defined by the terms "originate" mode and "answer" mode.

If point A *dials up* point B, then point A is the "originator" and the modem at point A will use the "originate" mode of operation (M1/D1). If point B answers the call, then the modem at point B will use the answer mode of operation (M2/D2).

Operating personnel do not have to select the operating mode for a 300 bps modem because the modem is designed to automatically switch itself into the correct mode. When a modem is powered-up and in originate mode. When a modem is connected to a PSTN exchange line and it detects ringing, then it switches itself into answer mode. When a modem link through the PSTN is disconnected, then the modem in answer mode reverts to originate mode.

There is a hardware strap option in a 300 bps modem which enables it to be permanently strapped to the answer mode. In timesharing computer systems all the 300 bps modems are normally strapped permanently in the answer mode.

A terminal for use with a 300 bps timesharing service will need a modem in the originate mode and an acoustic coupler.

An acoustic coupler (300 bps modem replacement) is usually supplied in three models: originate only model, ie M1/D1; answer only model, ie M2/D2, or originate/answer model, ie M1/D1 and M2/D2.

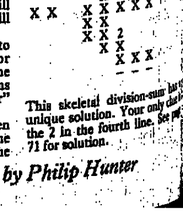
An acoustic coupler supplied for use with timesharing services is usually an originate only model. Obviously two terminals each with an originate only acoustic coupler can not communicate together through the PSTN.

Summary of modems for use on the PSTN
Asynchronous modems for use on single dialled connection

Transmission rate (bps)	Type of operation	Modem
Up to 300	full duplex	Datel 200
Up to 600	half duplex	Datel 600
Up to 1,200	half duplex	Datel 600
75/1,200	full duplex	Datel 600
1,200	full duplex	Datel 1200 modem
1,200	full duplex	various modem manufacturers
Synchronous modems for use on single dialled connection		
600 or 1,200	half duplex	Datel 2400
1,200	full duplex	Datel 1200 duplex modem
1,200	full duplex	various modem manufacturers
600 or 1,200 or 2,400	half duplex	Datel 2400 dial-up modem
1,200 or 2,400	half duplex	Datel 2412
3,200 or 4,800	half duplex	Datel 4832
Synchronous modems for use on two dialled connections (double dial-up)		
2,400-9,600 bps	full duplex	various modem manufacturers (including Data Logic CDF)

NOTE: in (a) and (b) some of the modems shown are only for standby operation on the PSTN. Standby operation is where the PSTN is used to provide a short term (hours or days) standby circuit as a temporary replacement for a lease circuit which has failed. Standby operation is discontinued when the leased circuit is restored to normal service.

PUZZLER



This skeletal division sum has a unique solution. Your only clue is the 2 in the fourth line. See page 71 for solution.

Workplace is compiled by Philip Hunter

PEOPLE

■ **Dr Nigel Horne** (above) former managing director of a group of GEC companies, has joined Standard Telephones and Cables as director, corporate development, a newly-created post. He has been with GEC for the past 25 years, most recently as managing director of GEC Information Systems and before that as director and general manager of Telephone Switching Group in GEC Telecommunications.

■ Rediffusion Computers has appointed **Ray Brooks** supervisor for the Letchworth customer engineering branch. He joined the company in 1979 on a sponsored TOPS course in computer engineering.

■ **Tony Kench** has been appointed managing director of Geisco's operations in the UK and Ireland. He has had a 15-year career with the company including sales, marketing and strategic planning roles.

■ **Michael Payne** has been made managing director of Beaufort Computer Services, a member of the Trident Group. He was formerly administration director of *Trident Life.*

■ **Malcolm Hyde** has been appointed I. P. Sharp Associates' European database manager, based in Paris and London. He has worked with the company for six years, latterly as branch manager of the Paris office.

■ New sales and marketing director of the CAE Group, the data communications specialist group, is **David Basey.** He joins from T-bar International, where he set up the company's European operations.

■ **John Dougall** has been made Data General's general manager for the UK and Ireland. He was previously the corporation's general manager for Australasia.

■ Appointed deputy chairman of Camputers, the Cambridge-based manufacturer of the Lynx range of microcomputers, **Stanley Charles** has been invited to join the board *to take responsibility for business* organisation. He is a partner in stockbroker Statham Duff Stoop, and until 1981 was an associate member of Simon and Coates.

■ **Aidan Hughes** has been appointed sales manager for Altergo Ireland, which encompasses Altergo Training. Previously general manager for Altergo Saudi Arabia, he has lived in Saudi for the past 18 months.

■ **David Quinn** has joined Pete & Pam Computers' *head office* sales team. Formerly with IBM on small systems sales in the North-west, Quinn will concentrate on Apple's new Lisa machine.

■ Versatec Electronics has appointed **David Goddard** as sales support manager. Goddard joined Versatec six years ago as a technical support engineer, and soon became UK service manager. After two years he was appointed manager, European service and support.

■ **Harro Welzel** (above) has been appointed chairman of Triumph Adler (UK). A member of the management board of Triumph Adler AG since early 1982, he began his career as a sales engineer for Valvo, a subsidiary of Philips, and became general manager of Philips Data Systems Germany, a position he held for seven years.

■ **Geoff Dongworth** has joined Zeus Hermes as divisional manager. Previously with Access for eight years, he was involved in the operation and supervision of its large IBM mainframe installation.

■ Micro Memory Systems has appointed two new sales executives. **Stephen Ash,** has joined from BASF, where he spent two years as a sales executive, and **Tim Lewis,** has been appointed to look after OEM sales in the North and Midlands.

■ **Ed Sherman** (above) has been appointed managing director of ACT's UK and International Distribution Group. *While retaining* responsibility for ACT (UK), the UK distribution arm of the ACT group, Sherman will now concentrate on distribution of the group's products worldwide. The appointment heralds the start of a major attack on international markets for ACT's new product, the Apricot 16-bit personal computer. **Peter Davies** takes over as managing director of ACT (UK) relinquishing his previous post as managing director of ACT (Financial Systems).

■ Press Computer Systems, the Wolverhampton-based newspaper systems company, has appointed **David S. Smith** as deputy managing director, from marketing director.

■ Sydney Development, Canada's first public software company has appointed **Leigh Wallinger** to handle sales of its Conquer decision support system. Wallinger was previously with Comshare, specialising in sales of decision support systems.

■ **David Longley** (above), appointed national sales manager of Delta Data Systems a year ago, is now sales and marketing director. He joined Delta Data from Harris Information Systems International Division where he was marketing manager. His first contact with the computer industry was with Burroughs in 1969, and his first senior managerial appointments were with Singer Business Machines in sales and product support.

■ The Department of Trade and Industry has appointed **Keith Mills** as director of the Northern Information Technology Centre Consultancy Unit (NITCCU). Mills is general manager of Preston ITEC on which the consultancy unit is based and was previously *with ICL in a senior management* position.

■ **John Hugheesman,** who recently joined Gresham Lion Electronics from Penny & Giles (computer peripherals division) has been appointed terminals sales executive for the Southern Home Counties. He has been in the peripherals business for about 20 years, working with Penny & Giles, Mohawk Data Systems and NCR.

■ **Sandra Weller** (above) has joined Peachtree Software International as a training consultant. She was previously dealer support manager with Computer Ancillaries for 18 months and before that was with Unistat Computers for two years selling word processing and microcomputer systems. Her position at Peachtree will involve both the development and implementation of training courses for new products.

■ Hawke Electronics has appointed **Kevin Wilson** as product manager for its AMD, Intersil and Inmos product lines. Wilson was formerly product manager for Hawke's Alpha Wire franchise.

■ EIU Informatics is expanding its team of office automation consultants. **Jim Bates, Karmen Guevara** and **John Springate** have all recently joined. Bates, a principal consultant, joins after three years with Logica, where he worked in office automation and communications. Springate, also a principal consultant, rejoins former colleagues both from Communications Studies Group University College (1972-79) and Communications, Studies and Planning (1977-82). Guevara has joined as a senior consultant, to undertake consultancy and research in office automation for both users and suppliers. She was previously director of European Research for the Yankee Group (1981-83).

■ **Mike Parmenter** has been appointed sales manager of Microtek, based in Ipswich. A *founder member of the ICL Com*puter Operations Group for East Anglia, and an associate member of the BCS, he has been involved in commercial data processing since 1966.

■ Promotion of Englishman **Andy Reichert** to senior vice-president of engineering and development at Vector Graphic has been announced. In his previous appointment as Vector vice-president of engineering, he restructured the engineering and development department and directed work on the company's current Vector 4 product line and Line local area network.

■ Omron Terminals' (UK) expansion into the more sophisticated PoS market with the RS100 range, is spearheaded with a new UK management and salesforce structure.

Ken Faggeter (left) comes in as UK *direct sales manager.* In 1979, he joined TSC as research and development manager with responsibility for new PoS product specification and sales.

Omron's customer services manager appointment goes to **Peter Astbury** (centre) who comes from Nixdorf, and was previously with ICL for five years.

Faggeter and Astbury will be *directly responsible to Hugh* **Burnett** (right), just appointed Omron Terminals' managing director from sales director.

FOUR major promotions in both operational and administrative areas are announced by Wilkins Computer Systems. **Leslie Smart** (left), who has been appointed company secretary and management accountant, since joining Wilkins has been responsible for setting up systems to cope with the growth of the company.

Former projects manager **Ann Johnstone** (second left) has become associate director of operations. She has over 10 years experience in the implementation of IBM-based accounting systems.

David Grundy (second right), former systems consultant has been appointed deputy associate director of operations, and will be responsible for quality control and development of technical standards.

Previous administrative manager **Janet Theobald** (right), has been appointed administrative director. She once controlled 50 in an employment agency.

DIARY

OCTOBER 27-28
Cumac is *holding its two-day* conference combining the annual meeting and the Microdata Information Systems (ex CMC) annual presentation, Ladbroke Mercury Motel, Watford, 9.45. Further details on (0442) 42124.

NOVEMBER 2
Vehicle Routeing. BCS Mathematical Programming Study Group. The London School of Economics, Aldwych, London WC2, 6.30pm.

NOVEMBER 2-4
Security in Teleprocessing. CGS Institute, Europa Hotel, London. Details on (07535) 58811.

NOVEMBER 3
Financial and Cash Management Systems – Practical Guidance in Selection, Implementation and Use. Queens Moat House, West Bromwich. Details from Anna McManus on 01-633 0121.

NOVEMBER 4, 5, 6
'Brainwave,' the consumer show for users of home computers, home video and home electronics. National Exhibition Centre, Birmingham. Details Clapp and Poliak on 01-747 3131.

NOVEMBER 8
The PC in Use in the Large Company Environment. BCS Auditing by Computer Specialist Group, Connaught Rooms, London WC2. 4.30pm.

NOVEMBER 9
Engapan: A Stepwise Programme for the Development of English-Spanish Machine Translation. BCS Natural Language Translation Specialist Group, London WC2. Room 3B18. 6-8pm. Speaker: Muriel Vasconcellos, head of machine translation project, Pan American Health Organisation.

COURSES

■ The Education Services Division of Control Data has announced five seminars to take place in London during November. The first four are to be held at Control Data Institute, Wells Street, W1, while the last is to be held at the Royal Court Hotel, Sloane Square, SW1. Costs are exclusive of VAT. The first course, Data Dictionary/Directory Systems, is set for November 1-3 and the cost is £345. Database Concepts for Auditors is a two-day seminar on November 7-8. It will be led by a senior consultant of DBD Systems and the cost will be £245. Audit and Control in the Database Environment is set for November 9-11 and the cost will be £345. Computer Appreciation is a three-day course, set for November 28-30 costing £345. Also set for November 28-30 is a three-day course, Data Communications and Networks, and the cost is £345. Further information from Sylvia Lyons, 01-240 3400.

■ Taurus Technology, training house in Unix, is now running monthly public courses in the C programming language. The five-day C workshops are designed to introduce programmers, analysts and other technical staff with practical experience of other computer languages to the syntax and structure of C. The workshop, for a maximum of 12 people, will next be held on November 28-December 2. Cost per person is £485. Details from Sally Riley, 01-734 7394.

■ On February 14-15, 1984, two seminars will be held at the London Press Centre with the aim of encouraging the use of computers for membership records, accounts, and word processing. The organiser, the London Science Centre, will be attracting delegates from learned societies and professional institutions on the first day; and clubs, associations, and agents on the second. Details on 01-839 4901.

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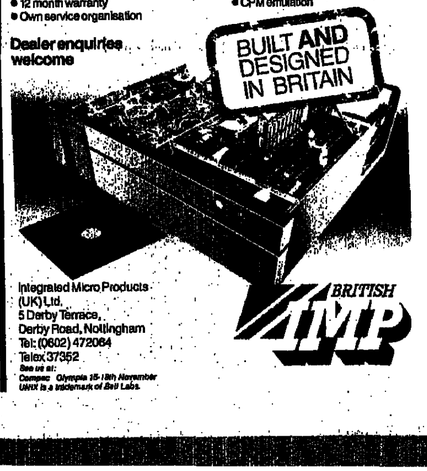

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DISTRIBUTED PROCESSING

Sharing data reflects socialist principles, writes Kevin Townsend

Distributing power among the people

DISTRIBUTED processing is a concept that should readily appeal to the left wing socialist – it is a practical example of giving power to the people. Gone are the days of the heavily centralised ruling class or caucus of elite DP professionals controlling the means of production – the big centralised corporate mainframe – leaving the proletarint user to fight (or queue) for his scraps of processing time.

Come at last are the days of equality and sharing, where the user has, and controls, his own means of production – the microcomputer or intelligent terminal sitting on his own desk.

The new decentralised offices of Micro Focus in rural Newbury, for example, have 14 kilometers of internal cabling to provide for up to 150 IBM PC XT's – one for every member of staff.

But like many so-called socialist systems, distributed processing doesn't work. At least it cannot work without a central body continuing to impose its will (albeit benignly and transparently) on all the users.

Distributed processing provides a perfect example of the universal third law of thermo-dynamics: left to its own devices, matter degenerates from order to disorder. So too will any distributed processing system. What may start as a good idea may soon become a white elephant.

The minicomputers are like the bureaucratic controllers of a system

And this is not a minor problem, for as a company grows so too does its distributed network. As it is forced to decentralise its expanding workforce from central London and its high rates, so too grows the geographical spread and communications cost of the system.

A socialist revolution comes by two methods: it can be the result of a violent overthrow; or it can infiltrate into a disintegrating social order – distributed processing uses the same methods.

The violent overthrow provides the more stable system, for it provides a more unified whole that will take longer to distintegrate under the law of entropy.

Infiltration is seen by M. J. Bateson, marketing manager for Ericsson Information, as the main problem for distributed systems. "The problem," he says, "is that until recently most distributed systems were cobbled together from existing hardware."

This is tantamount to building a socialist system out of capitalist institutions. Bateson clearly believes in the violent overthrow approach.

"Ericsson's equipment," he continued, "was designed specifically for the job in hand. Both the hardware and software are totally modular, and therefore provide greater flexibility in use.

"The user is given the option of several entry points," he continued, beginning to hint at a possible infiltration route. "If he already has a centralised mainframe, then he can buy terminals when he needs to decentralise. Some of these terminals have their own intelligence and can be used for local processing – for word processing and spreadsheet analysis, for example.

"Then, as the system grows, minicomputers can be positioned between the mainframe and the terminals as local group controllers. As the system continues to grow, more local minicomputers can be brought in, until the role of the mainframe is limited to one of central storage."

MARCHBANKS . . . "Managers who use computer are usually laymen"

In other words, Bateson sees the ideal distributed system as comprising a complex star network with a central remote mainframe providing corporate information and radiating outwards to a number of local minicomputers, which in turn radiate out to individual users. The minicomputers are, presumably, like the bureaucratic controllers of a system.

The fact remains, however, that most distributed networks simply materialise as a result of necessity. It is these that can cause the most problems, for they come into existence without ever first defining their rules and objectives (whatever else can be said about capitalism, its rules and objectives are well defined).

Ian Marchbanks, general manager of Tesdata UK, put it like this: "Once an organisation has made a large capital investment in data processing equipment, it is faced with the problem of ensuring that it gets value for money. Computers, and especially computer networks, are highly complex – and the data processing staff that operate them are necessarily technically oriented people.

"However, the managers of the businesses who use them are usually laymen. How, then, can they comprehend how their system is performing?

"The answer is to use a monitoring device that gives its output in a readily understandable form."

Marchbanks believes that distributed processing networks can only be kept in line by the use of a network analyser, or network controller, or, in his case, Smart (Systems Monitoring and Reporting by Tesdata).

Indeed, such devices are rapidly becoming a sub-industry in their own right, as a visit to this year's Compec will quickly demonstrate.

Being shown for the first time by Tech-Nel Data Products is the NMX 1000 second generation turnkey network management system. NMX 1000 detects and corrects channel faults and can be configured in seconds using different modules to give a complete solution for network control.

Also at Compec is the Philips Semacom 3 automatic network management system, which is designed to improve the efficiency and reliability of data networks by monitoring data transmission links and by providing maximum network availability.

Alpha Data Systems, which will also be at the show, recently announced the new TP-270 protocol sensitive network analyser for SDLC/SNA users.

"Network inefficiencies," commented a company spokesman, "such as under-utilised circuits or slow response times, add considerably to the cost performance ratios of the system. The rising costs of PTN line rental, especially the data transmission supergroups, make it necessary to monitor the network constantly so that grades can be made as and when they become expedient.

Not at Compec, however, is Paradyne, a company that has recently announced its new Analyn 5500 series of advanced network management systems. The Analysis 5500 central diagnostic processor (CDP) is capable of supporting up to six local or remote diagnostic front-end processors. Configurations are available to support up to 20 local or remote operator terminals and printers.

Returning to Tesdata's Smart system, it is a separate piece of hardware that plugs into the network. It helps in three areas of network management: operations control, configuration management and network planning.

Operational control is concerned with the day-to-day running of the system, where Smart continuously monitors such factors as network response times and line outages. It can also identify poor response times which may be a precursor of problems ahead, in order to allow the manager to take corrective action before the problems materialise.

Configuration management is concerned with optimising the use of equipment, evaluating traffic and comparing software options in terms of cost efficiency. For example, Smart can be used, by measuring response times and thereby judging efficiency, in the evaluation of different software packages.

Most distributed networks simply materialise as a result of necessity

Network planning is the art of anticipating the effects of future developments on a computer system and communications network.

"The main advantage of using Smart," said Marchbanks, "is that it returns control of the telecommunicating network to the data processing department from the user.

"At present it appears to the user as if he is in charge of the computer network, since it is he who rings the DP department to tell the engineers that he has a problem with poor response times or that a line has gone down.

"Using Smart, the DP staff can reverse the situation and advise the user of potential or actual problems as or before they occur – and often before the user is aware of anything. When this happens, it is clear to all concerned that the network is being operated in a thoroughly professional manner."

The main problem for distributed networks is the age-old problem of control: how do you stop the proletariat think it has control without reducing your own overall authority?

Distributed processing is a practical example of giving power to the people.

DISTRIBUTED PROCESSING

Emphasising all the unsolved problems

Reality is often difficult to achieve. Hedley Voysey reports

THE reality of distributing computing is harder to achieve than the brochures promoting the idea might lead one to believe. Although a number of software products enables distributed databases to be maintained, the cost and problem of reliability pose difficulties.

The IBM research team at San Jose, which tested out the idea of distributing the "R" relational database, uncovered the main snags and made progress towards possible solutions.

However, in practice the cost of keeping a distributed database is still unattractive to many major commercial users.

The Tandem software products in this area receive respect, along with some criticism. The high costs of implementing via Tandem illustrate the scale of the problem.

For some time, the prospect of achieving a Unix-based approach to unifying the process of extensively distributed computing has seemed appealing. But, as is well known by now, the efficient and reliable interconnection of Unix systems is still in the development phase.

The best known example of such developments in the UK is the Newcastle Connection, devised at the University of Newcastle.

This operates by exploiting the basic design of Unix, with its carefully controlled kernel and its tree structured file design that enables users to envisage a "superparent" sitting above all the separate portions of files, holding a number of machines as a single entity.

IBM has made the not altogether astonishing discovery that making computing more distributed emphasises all the unsolved problems of centralised computing, especially the problem of making computers easy to use and well matched with people.

The list of desired enhancements to distributed office systems being implemented on 8100 units, as well as through the 4300 series products, underlines that networks are used more and more by people who want to solve business problems.

What people are less and less willing to do is to peer at these problems through the haze of complexity generated by large centralised mainframe systems.

There is still no easy way for users at two geographically separate 8100 systems to communicate with one another. Part of the trouble is that the target being aimed at is moving around as soon as a fix is taken on its position.

Take the example of the concept of teleworkshop activities. It would, at a superficial level, seem simple for two users to exchange a spreadsheet model of the business, and by sitting at their respective processor-powered terminals to work jointly on exploring the options contained within the spreadsheet model. It turns out that the best way of achieving this exchange at the moment is to mail a floppy disc from one point to the other before attempting the exercise.

A closer look at what is being attempted in this joint examination of the spreadsheet shows that several new ideas have been introduced.

The notion of a document has been altered. What is being exchanged is both a style of presentation – the spreadsheet – the data that it contains and the program that underlies the functions available with the spreadsheet.

This means that the program must be transmitted from one point to another without any errors. At the present time the only generally available provision for doing this is contained in the teletex standards for store to store intercommunication between processor-based terminals.

These standards are not rigid and it looks as if there will be as many ways of implementing them as there are major design teams in the telecommunications universe.

Anyway, for the time being, in the UK teletex is still an embryo.

For users wanting to evolve their spreadsheets from data stored in the company's main database, there is still a lengthy process of acquiring that data which is none too user-friendly.

The alliance between Informatics and VisiCorp is aimed at solving this particular problem. It neatly illustrates that, just as the leading intellectuals have started to tackle the problem of document handling via distributed processing, the idea of what a document is has changed to include a program-driven entity.

For the time being, in the UK teletex is still an embryo

Much more serious, however, is an even more simple fact. Experience has revealed that nearly all extensively distributed networks of computing become used in ways not anticipated by the designers. This problem is likely to be made much worse as general office workers become familiar with electronic mail functions, teleconferencing opportunities and better information retrieval functions.

There is, therefore, a crucial need for those who install some form of network, whether a local area network, a wide area network or a combination of both, to be supplied with tools for instrumenting exactly how the network is being used. This is easier said than done.

Analysis of electronic mail usage shows that users like to be able to exchange informal communications and to promulgate formal policies via such systems.

One of the features in greatest demand is an ability to distinguish between informal and formal styles of communication.

There is a growing belief that problems solved by corporate-wide electronic systems will involve much more negotiation between systems than had been envisaged.

Examples of this activity include the use by project managers of interlinked systems to hunt for the causes of delayed items, communications or services. This style of working will crash through barriers erected within the organisation over long periods of time.

It will also encourage professional staff to buy information from outside the organisation for use as a way of critiquing proposals sourced internally. It is claimed that any aggressive executive might create an information brokerage within the local group as soon as he realises that there is a supply of such information.

Professor Murray Turoff, of the New Jersey Institute of Technology, has commented that "unless draconian measures are taken to restrict access to internal information, it will be found that managers use access to information as a prime source of leverage in fighting for their corner".

Another simple side-effect of spreading networks throughout an organisation is the demand for high reliability figures from the users.

The point is not at all surprising, for although high reliability has always been demanded by groups transacting key slices of business, there is even more trouble caused when failure affects the senior positions in a company.

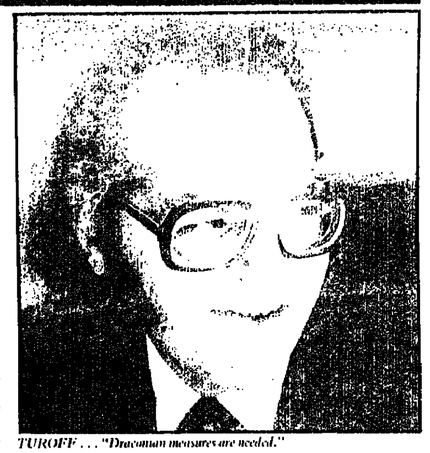
The short fuses used by hard pressed executives entrusted with the fate of the business are well known. The truth that this temper is a fact of computing life is only now being rammed home to builders of office networks.

The proliferation of systems offering the highest levels of availability will be one of the obvious effects of distributed processing over the next year or two.

The hunt for fault tolerance will be a boost for theoretical computer scientists, searching for funds to support studies in co-operative recovery in distributed software. It is not enough for software to be correct, distributed processing demands that software be robust.

This stems from the discovery that it is simply not possible to simulate all types of failure in distributed systems.

The advent of the microcomputer transformed an ambition to distribute computing into a reality. It now needs changing into a workable, reliable and robust basis for problem solving.



TUROFF . . . "Draconian measures are needed."

10 Downing Street
Whitehall

Dear Bill,

I shall never understand why the White Lion is not accorded a State Opening in the same way that Parliament is. After all, its value to society, along with most other industries in the country, is at least as great. In my mind a trumpeter should be posted outside each one at 6 O'clock every evening to blow a fanfare and rally the faithful. Actually, one of the big breweries has asked me to consider accepting a seat on their board. A fitting tribute, I think you'll agree, to one who has shown such commitment to the industry.

I thought I'd better get a nod of approval from the Boss before proceeding and found her with that new box of tricks of hers I told you about, the Fortune 32:16 – a micro with the power of a mini, with change from five grand. Far from saying how nice it would be for me to have a little outside interest, she informed me I needn't leave my desk at No. 10!

Apparently DMS, the chappies who sold her on the idea, were the first people in the country to hook the Fortune up to a mainframe the other side of the hill, using 3270 protocol – it rhymes with alcohol, but unlike too much of the old firewater, it actually makes intelligent communication possible. Anyway her idea is to sit one of the little jobbies on my desk here, and give me access to the brewery's mainframe – over the telephone wires if you can grasp such an idea.

Talking of you grasping ideas, I have to reject outright your theory that 32:16 is an upper-class way of giving the odds on one of the runners at Sandown. When I presented this idea to M she retorted that the only runners I should be thinking about are the ones that run on the Fortune – i.e., all this software stuff.

Apparently one of the wonders of this clever little number cruncher is the fact that it uses Unigem software – based on the Unix operating system. As anyone worth his salt knows, Unix is an outstandingly versatile operating system. What the Fortune whizz-kids have managed to do is adapt all its power to their micro. You can't help admiring these youngsters sometimes can you?

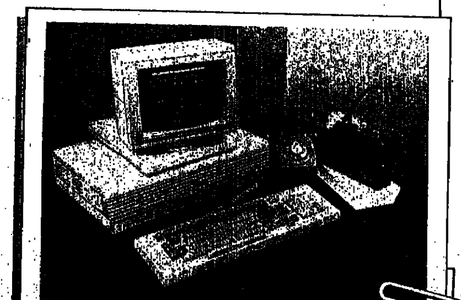
For example, with my off-the-shelf Unigem software, I shall be in a position to monitor sales and purchases, control stock, invoice sales, initiate purchases, run the payroll, plan the long-term finances, etc., etc. In fact I shall be a complete Electronic Manager. Come to think of it, if all else fails I could pretty well run the whole show myself.

Unigen can also handle a whole shooting match of other things such as desk-top calculation, electronic diary and memo, messages and mail, telephone lists, document handling, the list is endless.

What it all means is that the Directors of the brewery will have to sit up and take me pretty damn seriously. What I shan't know about Office Automation won't be worth knowing.

The DMS chappies will explain it much better than I, so I enclose another coupon for your use.

Dms



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DISTRIBUTED PROCESSING

Allied brews a group network

Allied Breweries describes how it replaced its ageing equipment

ALLIED Breweries Management Services Limited (MSL) has the responsibility of tying together the various operating arms of the parent, Allied Lyons Group, which encompass both comparatively small retail outlests, ie the pubs, and a diversity of brewing and distribution organisations.

This provides an interesting application of IBM's SNA architecture, being more geared towards the retail and production of goods

Things were reaching crisis point with the existing centralised system

– most SNA users come from the financial services and banking sectors – and using non-IBM kit for the outlying SNA nodes.

Back in the late 1970s, Allied Breweries' corporate organisation was traditional and hierarchical. The initial push to move towards a distributed processing solution coincided with a need to decentralise in response to changing conditions and the vulnerability of central services to external factors.

Mike Connolly, MSL's sales and marketing manager, recalls: "The issues at that time were very much concerned with how we were to support the central on-line services when a lot of stoppages were taking place."

The need to replace a lot of the ageing central data preparation equipment was also pressing – much of this was operated on a key to cassette basis, thence to magnetic tape, and finally on to the main CPUs.

Keith Harvey, computer operations director, says the original moves to decentralise operations found expression in a number of trial installations using IBM Series 1s. "We were looking for a series of kit that would at least replace all that key to disc."

This was done with the RJE facilities on the Series 1, plus a look-through IBM 3270 link to the main site at Shobnall Computing Centre. But Harvey admits that "a lot of it was do it yourself software; we had to develop our own transaction handler".

However, MSL suspended development along this path when *the 8100 series from IBM* was announced, as it was felt that this would offer a better way of implementing SNA over Allied's operating groups.

By October 1979, however, Harvey was dissatisfied with the 8100, because it was not fulfilling IBM's promises. "It could not in our terms meet the demands as a 'data prep engine'. We also started to have some doubts as to whether the depot situation would produce a small enough order cycle."

Allied's system had to cover small pubs and diverse brewing and distribution organisations.

HARVEY . . . "We've made life a lot easier."

Things were reaching crisis point with the existing centralised system – the data prep operation was, according to Harvey, "falling apart" – which forced MSL into finding an alternative SNA compatible hardware supplier very quickly.

MSL started with a list of 98 suppliers who might have been able to fill the niche. A basic requirement was the ability to handle data prep on a standalone basis, plus a 3780 compatible connection to "squirt" data back to head office.

The final choice was Computer Automation's SyFA mini. Harvey says that MSL ended up with "a short list of one".

Negotiations were taking place with IBM during this period, and it was just before one of the regular meetings with IBM in 1981 that the first SyFA was delivered. Harvey recalls with satisfaction that it came in on a Monday, was commissioned by Tuesday morning, and "by the time I met with IBM on Thursday afternoon, we'd executed our first program".

Before opting for the SyFA, MSL did its homework by checking a number of 8100 users in America. In many cases, 8100s had been bought for reasons quite different from those that had recommended it to Allied. One user had bought the system primarily because at that time it offered the potential of a convergence engine" for voice, text and data – rather like Wang does today.

Harvey sees SNA's arrival in the 1970s as ranking highly "in size and scope; its implementation is as large as OS was in the mid '60s".

MSL's decision to go along the SNA route was vindicated on Harvey's return to the US in 1982. As a result, he says, "we were convinced that we were right in the direction that SNA was going, and that we were right in the way that we're going".

At present, MSL's raw processing power is provided by courtesy of an IBM 3083 and a 3032, both at Shobnall. Around 50 Computer Automation SyFAs handle local processing jobs in each of Allied Breweries' divisional offices.

However, SNA implementation at the moment is limited to a hierarchical access environment – all communications traffic has to go through the Shobnall site, and MSL is utilising IBM's CICS operating system for a message switching role in this context.

Part of the problem facing MSL

Handheld micros act as stocktaking and re-ordering aids

in wishing to provide SNA with swifter access techniques, such as multiple ring or star characteristics, is that each layer of IBM's SNA *implementation is currently* different. Connection of other devices to an SNA network is not made any easier by IBM's relative slowness in releasing additional products for it; only recently has a network management tool been made available.

But as things stand, has the combination of IBM's SNA plus SyFAs provided the sort of resilience and flexibility initially required by *the company*? Harvey feels that many of the original design criteria have been met. However, he also admits: "We have perhaps not moved as much on the productivity side as on development."

But certainly in the primary fields of order entry and local data prep, the results have been gratifying. "The intention is for people out there to do 80% of their updating tasks – *which are terminal* intensive – leaving the number crunching at the central level."

In many cases this has allowed local installations to catch up with unseasonal workloads by working extra hours or weekends; something that it would be unable to schedule effectively on a centralised basis.

Downtimes have been cut as well. Pam Dale, network and distributed systems manager, reports that "for a good majority of work, the availability of the hardware has been up to 2% more reliable than it was before".

Obviously an implementation of a network the size of Allied's is dependent to a great extent on the quality of its communications links between various outposts. MSL uses Case modems with inbuilt analysis facilities to monitor data integrity. If problems occur on site, Dale's team can carry out remote checks. "With the software tools that we have, we can go into that site as though we were a local screen," she says.

The whole planned implementation of the network has been fully operational since December 1982. Dale recalls: "The biggest problems have been at the old site where we have had an obscure problem – but obviously we have been able to keep the remainder of the system up and running."

On the whole, users have reacted favourably to the facilities provided at the local level, especially having a greater freedom in connecting up various devices, such as screens, without needing head office intervention.

Leading on from this is the concept of local area networking, probably using Computer Automation's SyFAnet systems, at each remote site. Although each SyFA can theoretically accommodate 256 VDUs, Harvey points out that "at the moment, it is still constrained because it is a mini".

The eventual aim is to provide each user with his own intelligence – the IBM PC being a strong contender – in order to allow the SyFA to concentrate on being a transaction processing unit, rather than being bogged down with screen handling.

In a way, it's the same process of decentralisation repeated on a smaller scale.

As far as the typical user is concerned, Harvey is "not sure" that he will ever be able to tell the difference between this type of [illegible] vice and the traditional VDU.

As far as cost is concerned, [illegible] been about the same as alternative approaches, as far as Harvey [illegible] judge.

However, he adds: "We [illegible] made life a lot easier in difficult trading conditions for the company, and we've bought ourselves an opportunity to go forwards."

Typical moves include extending the scope of the basic network further down the line, [illegible] individual pubs for example. One such scheme is the provision of handheld micros to act as stocktaking and re-ordering aids, which has been implemented over several selected sites.

Another is viewdata, which [illegible] seen as a more realistic alternative to distributing individual micros [illegible] representives, or having them [illegible] pubs.

Harvey cautions against the problems of driving all [illegible] machines, should interactive ordering be employed.

He cites the bank's problem with keeping software versions up to date as well.

"We'll make the payback [illegible] doing the things we know [illegible]" he says.

Perhaps a longer term objective is to wean Allied's computer [illegible] off their predilection for [illegible] MSL produces around 70 million lines of print a month. Not only [illegible] it very bulky, but much of the information contained is more [illegible] historical nature than of immediate value by the time it does get looked at.

It takes a degree of skill to [illegible] through a mass of printout [illegible] find the variance among all [illegible] figures.

Harvey thinks that the way ahead is to produce more exception reports instead of traditional listings of data.

"We're hoping that on the [illegible] towards integration WP and [illegible] people will browse through data [illegible] screens," he says.

From the operations side, [illegible] echoes this belief: "There is going to be a snowball effect towards people relying on screens – [illegible] we've got to be prepared [illegible] support that area."

DISTRIBUTED PROCESSING

Keith Holder looks at the hard and software available

Link the David and Goliath machines

THE concept of distributed data *processing using products from* different manufacturers is gaining wider acceptance. Over the past two or three years there has been a growing number of hardware and software products designed to allow the user to do just this.

An indication of just how seriously the major manufacturers are taking the mini/mainframe link comes from IBM. It has just announced a link for the IBM PC/XT advanced personal computer and the 370 mainframe running under VM/CMS that will allow users to download mainframe software.

But prior to this announcement the idea had not met with the approval of some of the established manufacturers who saw potential sales going to rival, and sometimes very small, companies, even though one major has now officially endorsed a product.

The principal development is the linking of micro or personal computers to mainframes, allowing programs to be downloaded on one hand while dramatically improving the useful work an individual micro could be made to do.

The idea of linking machines in this David and Goliath fashion really started with the dedicated workstation, but these intelligent terminals do not offer the flexibility of equipment choice offered by the latest breed of aids for distribution, the interconnect.

This takes the task of linking the two systems out of the realm of machines and operating systems and into software. This has benefits for DP managers who were once faced with trying to persuade other users in their company to buy only micros that were machine compatible with the mainframe. It also has benefits for users who might otherwise choose systems more suitable for their purposes.

The great improvement over previous efforts at linking micros and mainframes was software compatibility. Previously the software development had to take place separately for each machine because of incompatible language standards and protocol restrictions. This was inherent in the internal machine codes.

Most mainframes use Extended Binary Coded Decimal Interchange Code (EBCDIC) while micros use the American Standard Code for Information Interchange (ASCII). Communications channels are also different: mainframes use asynchronous and micros bisynchronous.

For any interconnect system to work there must be two processes necessary to transform the link at each end. Because not all the characters in the ASCII alphabet can be transformed to the EBCDIC equivalent, a filter may be required or alternative characters selected.

Such protocol converters may be hardware or software devices. MSA's answer is a black box, suitable for the IBM market, which simply plugs in between the mainframe and up to eight micros, connected by communication or telephone lines. *MAP computer* services has taken the other option, providing ICL users with a CO2 package which emulates the operating system.

Virtual Microsystems Ltd (VML) provides an interesting example in its Bridge package, which allows any micros to link up with a Digital Equipment minicomputer via the CP/M operating system, using elements from both.

The Bridge is supported by a number of software utilities which allow files created under DEC software to be transported to the *CP/M environment and vice versa.*

In the IBM compatible market, competition is already hotting up. The latest release is a new model of the Avatar universal terminal converter from ISG Data Sales which will convert IBM 3278, 3178 and plug compatible versions of the 3278 terminal into intelligent workstations.

The TC 3278 is a board device

Software can be developed on a micro and run on a mainframe

which will run with a CP/M, *CP/M-86 or MS/DOS operating* system. It offers additional flexibility in that it will run on non-IBM hosts and can be connected to local printers and modems.

A step down to the micro was made possible by the UK company Micro Focus. The company's CIS Cobol constituted the first implementation of Cobol on micros and the later Level II Cobol has been certified by the US Federal Compiler Testing Centre. This can run mainframe programmes written in full Ansi '74 standard Cobol, and be used to develop them.

Products have appeared from System Research and MSA which transfer down programs from the host mainframe or mini.

Having established that both hardware and software can now perform this type of distributed processing, Cleary sees a market where new systems are not the *only ones to benefit. He said that* there was probably a number of organisations where, over the years, the desktop computer had been brought in for individual departments' use.

These were, by their very nature, an unknown quantity for DP departments, which have no way of knowing just how much useful data is stored on floppy dscs, privy to the micro operator.

By retrofitting interconnects, Cleary thinks that such a situation can not only be rectified, by allowing the micro users to store information using the central processor's memory, but it will also return control and security to the DP department as well.

The growing number of interconnects offering the ability to run on different operating systems and host computers should take care of most micros found in common use.

Micro-based CAD/CAM systems have several advantages. Micros of 16-bit power (and 32-bit in the future), have a large range and several major suppliers have managed to modify their CAD programmes to run on smaller machines like the Vax. Others have used Motorola's 68000 microprocessor.

Although the choice of micro will be more limited in specialist applications, users can build up a system where other functions may be run from the central processor such as accounts.

The overall market value for distributed systems using dissimilar hardware is difficult to quantify, according to analysts. This is partly due to the problem of keeping tabs on how many sales are made for this purpose, but it will be further confused by the retrofit aspect.

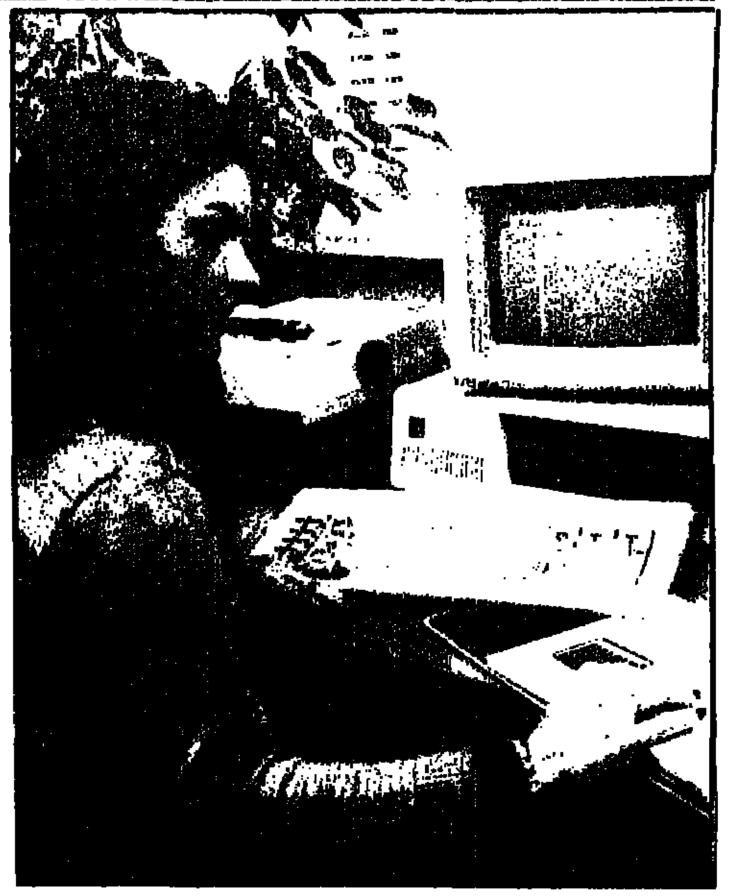
The concept of distributed processing was highly developed in Europe, said Rolf Leister at the recent *Financial Times* conference on professional personal computing. Manufacturers have developed application solutions, especially for small business users, he observed, and it was in this field that the micro was competing directly with other information processing services.

Though the appearance of the interconnects is fairly recent, the *potential sales are not small* and it is significant that though DEC did not develop a board itself, it was quick to get involved in VML's offering.

A spokesman for DEC said that the company would pursue a policy of support for interconnect products provided they measured up in terms of performance. For its involvement, DEC did get a say in the final product.

The main centre of activity in the future is likely to be the IBM user base, simply because of the market share in medium and big systems held.

Whatever the outcome of this new addition to the market, no one is denying that it has a future, probably a very good one, in the UK.



A link for the IBM PC/XT advanced personal computer (above) with the 370 mainframe has been announced.

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DISTRIBUTED PROCESSING

Solve it, but not tomorrow

Putting bits of the database where they belong should be easy—but it's not yet, writes Phil Manchester

IT all sounds simple really. Instead of having your corporate database on one, large central machine, connected by communications lines to remote and local terminals, you put the bits of the database that are relevant to the various parts of the operation where they belong.

Your customer file can be split up across appropriate geographical areas, so each branch only has the customers in its area, your product file can be distributed across your manufacturing facilities and your stock file can be distributed across your warehouses.

In the middle you will, of course, need a large central dictionary that brings the whole thing together so that the central data processing department knows exactly where every bit of data is.

It sounds simple but, like most simple-sounding things, it is in fact very difficult.

For one thing, the information you use to update your fragmented/dissipated database probably does not come from the particular area where it is held. Updates to the stock file could come from the central accounting office, the factory or even a sales representative out on the road, even perhaps via a portable terminal.

The logistics of ensuring that a particular update is applied to the right part of the database at the right time do not bear thinking about.

For another thing, recovery from a machine crash or a line failure in the middle of an update (after the data has changed, but before the central directory has recorded it) make the practical implementation of distributed database far from easy.

Some would say that it is not possible.

If you then start thinking about the security aspects of looking after a data file that is spread over a wide geographical area (maybe even the whole world in the case of some large corporations), you might think that distributed database is not worth the bother. Far better to get on with the business of smartening up the user interface or improving the response time on IMS.

"There are so many other things that need to be done," observed Vic Morris, managing director of Cullinet in the UK. "Getting the function features to users and putting networks together seem to be more important at the moment."

Cullinet's IDMS product is one of the advanced database systems being sold into the mainframe market at present, offering the standard bag of database tools – relational views, natural language interfaces and the rest.

"I think distributed database is one of those fashionable things that comes and goes from time to time, but I don't think at the end of the day it is a feature that necessarily matters so much," Morris went on.

"It is more important to get the application together and the software you use should not stop you distributing in the future."

Cullinet had adopted a pragmatic policy of putting off the problem for the time being, at the same time as leaving space for it in its database software.

"We have tried to build the idea of distribution into our software so that it is possible across a network of IBM machines – using the IBM PC as a sort of executive workstation," said Morris. "Maybe in three or four years' time we will have a true distributed database system – but not yet. No one has."

Morris also pointed out that current thinking in database interface design makes the distribution of the data even more difficult.

"Just think of trying to do a relational join across a distributed database. You would end up with some horrendous recovery problems."

MORRIS . . . "There are so many other things to be done."

Relational database has certainly changed the nature of the game. With IBM's backing it seems unlikely that that part of the database equation will change in the foreseeable future.

IBM is known to be researching distribution of data and has published a number of papers out of its research centre in San Jose. One approach it has made public is the notion of distributed transaction management.

In a paper published in 1980, Dr Bruce Lindsay describes this approach and suggests it may hold the key to solving some of the recovery problems.

Essentially, it works on the same principle as any other transaction processing system. A transaction is sent through the network to the various bits of the database and, following a successful outcome, each database "commits" itself to the transaction.

But this approach is not without its problems. "When the database is distributed and more than one site is involved in a single transaction," writes Lindsay, "the distributed database management system must make use of a two-phase commit protocol to ensure the uniform commitment of the transaction at all the sites involved.

"The notion of a single co-ordinating site which makes and (recoverably) records the commit decision after the other sites of the transaction are waiting to be informed of the outcome, is the key to distributed transaction processing."

This research has yet to manifest itself in any recognisable form in IBM products. IBM, in fact, seems to be pursuing the opposite direction at present, with the concept of the "extracted" personal database built around its SQL products.

Here the principle is that database information used for decision support operations is not required to be as up-to-date as that required for operational purposes.

In other words, a slightly out-of-date stock file is not required for the marketing department to examine and plan stock movements using some sort of planning system.

So extracted information can be provided down a line in bulk to a terminal or a personal workstation, the relevant manipulations performed remotely from the central database and the important results then sent back to update the database.

This is fine for planning exercises, certainly. But if there is a requirement for a true distributed operational database, then what IBM has to offer currently seems to fall short.

One product that has been around for some years – which actually includes a relational model – is SDD-1 from the Computer Corporation of America. Implemented for the DEC System 10/20 under the Tops operating system, SDD-1 seems to answer many of the problems mentioned earlier.

Unfortunately it does not appear to have a UK distributor. The system is described fully in *ACM Transactions on Database Systems*, Volume 5, No 1, March 1980.

It takes many of its ideas from the relational model put forward by IBM's Edgar Codd in the experimental relational system, System R, and follows the transaction approach suggested by Lindsay.

Operationally, the system is built around three types of virtual machine: transaction modules, data modules and reliable network modules.

The authors of the paper describe data modules as back end database management systems that respond to commands from the transaction modules and the interaction between them takes place in a predefined local workspace.

The transaction modules control the logistics of actions affecting the database (the individual data modules) and the whole thing is bound together by the reliable network.

In many ways it is this latter group of modules that is the most interesting. The Computer Corporation team describes it as a means of "interconnecting the transaction modules and the data modules in robust fashion".

The four main functions of this virtual machine are guaranteed delivery – making sure messages get through regardless of whether parts of the network are working or not; transaction control to make sure that updates are posted to all data modules or none of them; site monitoring to ensure that machine failures, line failures are logged; and a network clock synchronised at all sites.

Extracted information can be provided down a line in bulk to a terminal

The hub of SDD-1, like all modern databases, is a central directory. This contains the relational definitions, the locations of the bits of the database (termed "fragments") and usage statistics.

The directory is held as just another piece of data, so it may be fragmented and distributed through the network like the rest of the database.

Another system – unfortunately tied to a single manufacturer – is the distributed database that comes with the Tandem Nonstop machine. As Vic Morris of Cullinet noted: "It doesn't have problems with recovery because the network never goes down."

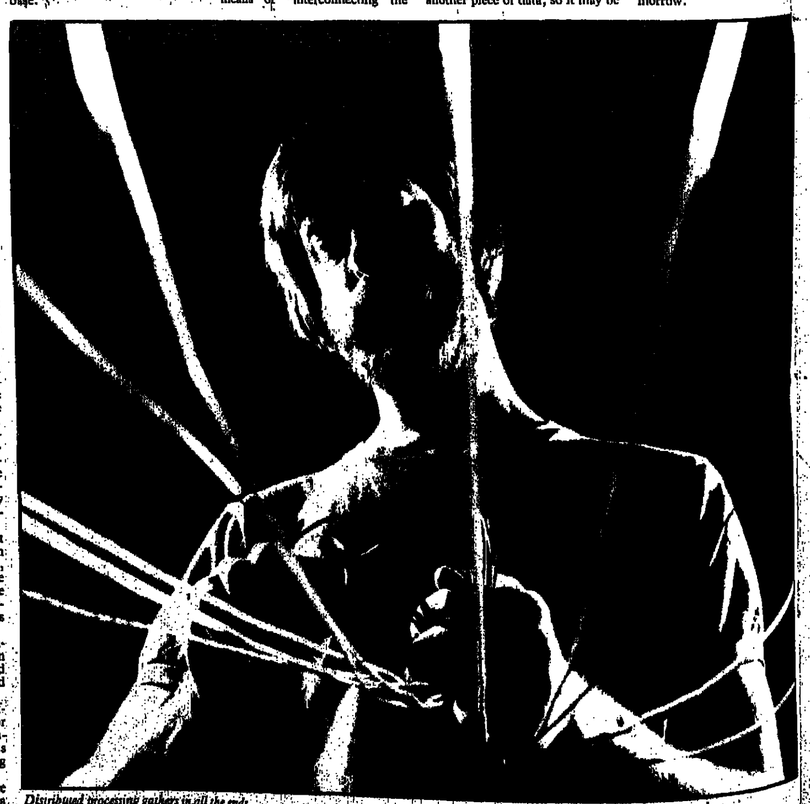
Tandem has solved the problem using a high degree of redundancy – everything throughout the whole system is actually duplicated.

At this stage in the development of database technology, the idea of distribution seems to have been eclipsed by the apparently more important aspects of user access through query languages and relational views.

The only major incentive to distributing the actual data as opposed to the means of access is the high cost of communications. In the long term this could well fall as higher bandwidth technology and cheaper methods of networking emerge.

Satellite links and fibre-optics could well change the whole picture and make the traditional idea of data distribution obsolete. In the meantime, it seems that there are many knotty problems to be solved in marrying up the demands of large scale relational database organisation and access with the obvious economies of distributed data.

Perhaps IBM's research in the area will yield some of the solutions to these problems. Whatever happens, it certainly won't be tomorrow.



Distributed processing gathers in all the ends.

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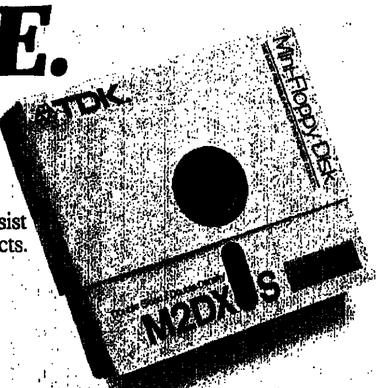

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Falling prices strengthen the case for distribution

David Casey traces the rise in favour of distributing power as it comes within financial grasp

FOR any organisation to invest in a computer system a decade ago involved a major decision. Capital *expenditure was an important consideration*: the mainframe machines which dominated the marketplace in the early Seventies came with a six-figure price-tag and running costs to match. Minicomputers had yet to make a significant impact on the computing scene – with limited processing power, these systems were confined to dedicated applications in commerce and industry.

Having made the commitment to a computer, data processing *management had to determine the* most efficient way to make the resources available to the organisation. At best, a priority user could be linked permanently to the computer through a remote terminal. In the least satisfactory situations, access was through batch processing or by booking time at a terminal pool.

With the cost of data processing systems reduced by an order of magnitude, a computer is now within the financial grasp of even *the smallest business.*

At the lower end of the market, standalone micros provide a cost-effective entry to the technology – the choice facing the prospective user is one of vendor and software suite. For the medium and larger scale enterprise, the decision is between: concentrating computing power in a central machine, and distributing this power nearer to the user.

As the price per kilobyte of computer memory continues to fall *with each new release of a proces*sor, the case strengthens for distributed computers rather than a centralised system.

The growth of multinational organisations formed from a network of virtually autonomous companies is making corporate computer facilities impracticable. Each division has its own requirements for data processing, and these can be met more effectively at a local level.

Distributed processing – in which these "local" computers are co-ordinated into an integrated information network – provides the degree of control required at the regional or departmental level. With a distributed system comes a physical independence. Though there is communication between the processors, failure at one of the outposts will not jeopardise activities being handled elsewhere across the system.

In the more sophisticated networks, there is a provision for a *controller to sense a problem and* switch processing to another machine automatically. Comparable difficulties in a centralised computer, however, could affect every user unless duplicated failsafes were built into the system.

Independence from a host computer apart, there are more material benefits in distributing data processing. A centralised computer must maintain a constant two-way flow of communications with its terminals. Every *command has to be transmitted for* processing with the outcome being sent back for display.

If the users are on sites remote from the computer, expensive data quality lines are tied up.

Traffic generated by several terminals can be multiplexed on the same line, but this is only practicable if users are clustered together. The greater the number of users sharing a line, the more vulnerable that region becomes to breaks in transmission or errors on the line.

Communication is therefore a substantial overhead to be added to running costs of a centralised system. While there is some move*ment of information between the* elements in a distributed data processing network, the occasions on which inter-processor communication is required are limited.

Files will have to be brought from storage, but in a system which properly reflects the users' requirements, data which has to be accessed frequently will be held locally.

Transmission rates over public or private lines are less critical than with a central computer, so that *lower speed – and therefore lower* cost – communications hardware can be employed.

But there are reports every week of mainframe computer sales. If distributed data management were the panacea that its benefits suggest, there would be little scope for systems like the IBM 30XX range, or ICL's 2966 machines.

In practice, much depends on how information is to be organised. If the need is to hold this data within an integrated manage*ment system, material* generated by several inter-related applications programs should be processed through the same set of access routines. Only a centralised computer facility can support this *single* database and its supporting directories.

Security of data is perhaps the greatest attribute of centralised systems. Rigorous control can be exercised over information being added and retrieved. Where several users have rights of access to the same data, all are handling the same version.

To make the most effective use of a distributed system, copies of frequently accessed information could be held on machines *throughout the network, with the* result that several inconsistent versions might exist.

The earliest distributed DP networks were simply strings of independent computer systems, each with its own processor and database. The concept has evolved into total systems, with each processor logically interconnected as a single data processing system.

How this degree of co-ordination is achieved depends on the networking technology involved. *IBM has its Systems Network* Architecture (SNA), which is emerging as a *de facto* industry standard for linking otherwise incompatible computer systems into a network. SNA interfaces are provided from other proprietory net-

Users in control are likely to have no inherent knowledge of computers

work architectures – Digital's *DECnet, for example.*

Distributed systems can be described in terms of their architecture, which has a direct bearing on the integration which can be achieved.

A fully integrated architecture is intelligent. Every resource, whether workstation, printer or data storage device, is aware of every other element in the system; the network can therefore be transparent to the user. It only requires the correct filename to be entered through one of the distributed processors for the file to be identified wherever it is in the network and brought to the user's terminal.

One step less sophisticated than total integration is a federated structure, in which compatible processors support identical operating systems and similar application software. The units work independently of each other until access is required to data or programs elsewhere in the network.

Special routines set up links with the machine on which the information is stored, and whose identity is known to the user. Only *while those logical links are main*tained will the "remote" database appear transparent.

Barely qualifying for the description of architecture is a situation in which incompatible machines run different system software and applications. Networking these resources is an ad hoc affair, with communications alien to both machines. A Hewlett-Packard minicomputer might be transmitting data to a Honeywell machine using an IBM protocol.

Whatever the disadvantage of networking distributed computers, the resources in the network are likely to be under the control of users who have no inherent knowledge of computers. This is *not the case with a mainframe* facility.

A centralised computer, capable of supporting an expanding organisation, is an inherently complex system. With megabytes of main memory, and multi-user, multi-tasking operating systems in control, these machines require the attention of professional data processing staff. A divide is immediately created between these and providers of the DP commodity – their users.

Computing comes over to the executive as an unfriendly and inflexible environment, which cannot easily adapt to meet his changing data handling requirements.

Providing an interface between remote computer user and a mainframe machine is as much a problem for the industrial psychologist as it is for the DP professional. Ease of access to a central database becomes a critical feature of the system: keying a password and *filename* should be the limit of computing ability required by users who may have to extract information as part of their job.

Inserting a minicomputer as a user-friendly interface between the remote workstations and the mainframe is certainly one way of streamlining the flow of data for an operator to a centralised corporate database.

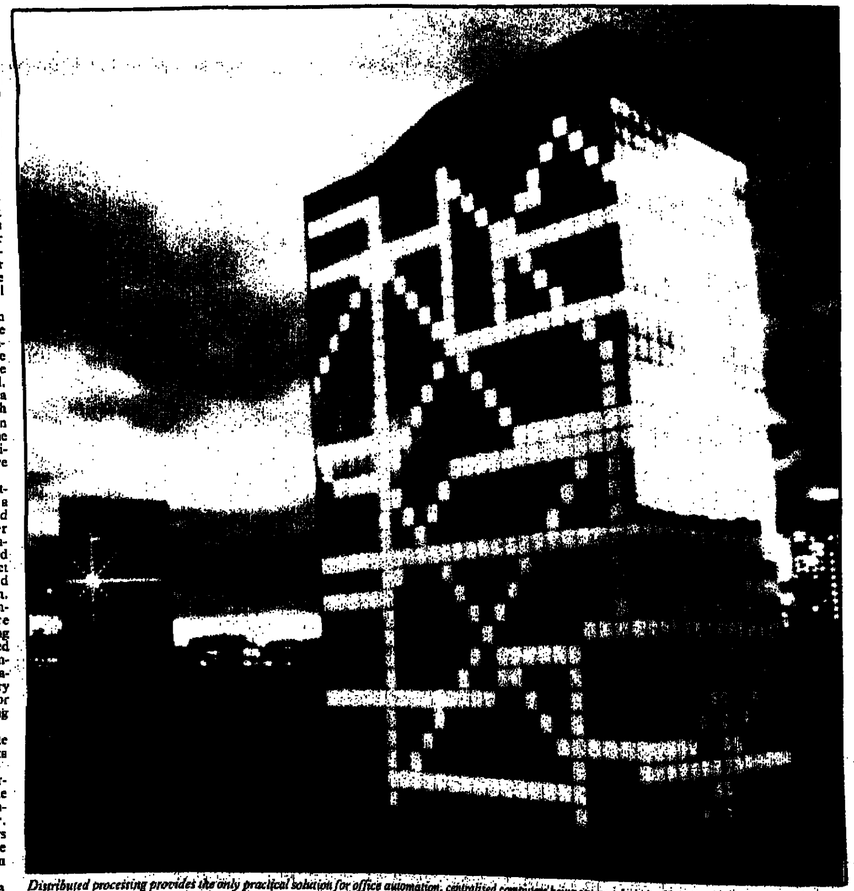
One of the more successful attempts at improving the interaction between a mainframe and its users is the SyPA system for Computer Automation. It was designed primarily as an intelligent communications mode between an array of data input devices – typically dumb terminals – and an organisation's mainframe computer.

Computer Automation has taken the process one step further with SyPATEL, a videodata interface which can accept and recover mainframe data through conventional television sets. Transmission is limited to the slow 75/1,200 baud viewdata rates, but in the applications for which the method of access was envisaged – retail outlets ordering stock from wholesalers, for example – the volume of data being handled does not create a problem.

For the "real" world of data management, however, the move will continue towards distributed processing.

The single most important factor in this movement will be office automation. Centralised computers are spectacularly inefficient engines for running word processing software, and the ever increasing range of support packages for office administration.

In an environment where the first generation of dedicated word processors is falling due for replacement, users are looking towards systems in which text, data and graphics can be integrated. Distributed data processing provides the only practical solution.



Distributed processing provides the only practical solution for office automation, centralised computers being spectacularly inefficient.

Answer/call comes in a briefcase

AUTOMATIC call-and-answer enhancements have been incorporated by Texas Instruments in its Model 709 battery-powered data terminal, which fits into half a standard-size briefcase.

The auto answer/call feature enables the user to pre-program telephone numbers and computer log-on codes. By two-key operation, the 709 can be made to dial up a host computer, retrieve data, printout and log-off – all while the owner is undertaking other tasks.

The auto answer facility enables telephone callers to leave typed messages which are printed out by the 709 without involving the user in any way – a written "answering service". An enhancement available early in the New Year will be a 4K RAM module to allow copy editing prior to transmission.

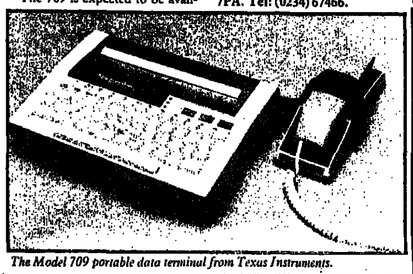
The 709 is expected to be available in volume during the first quarter of 1984.

At 6lb without batteries, the 709 cuts the weight of TI's existing portable terminals by half, which are themselves at 13lb considered easily portable. TI says that the one-off price for the 709 in a typical configuration is about £800.

The terminal, when powered by an optional battery pack, eliminates the need for an electrical outlet, providing for up to two hours' continuous operation.

Standard features of the Model 709 include a full-sized typewriter-like keyboard, and print formats of both 80 or 132 columns per line from the new, virtually silent, 9x1 element, user-replaceable printhead.

Texas Instruments (CW), Manton Lane, Bedford MK41 7PA. Tel: (0234) 67466.



The Model 709 portable data terminal from Texas Instruments.

Display 16 colours at once

THE Hewlett-Packard 9836C colour graphics computer is now available for rental from Microlease. The system allows the user to choose from a palette of 4,096 colours through a programmable colour map.

Up to 16 colours can be displayed at once with four graphics memory planes.

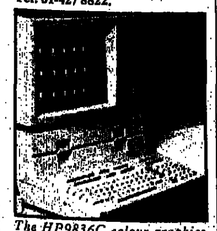
The 9836C system includes Basic, Basic extensions and Pascal; 640K RAM, two 5¼-inch disc drives; internal HP-IB; and an 80 character CRT with 512x390 dot resolution.

Using HP's enhanced Basic or Pascal graphics language extensions, well-documented sophisticated graphics can be produced, says Microlease.

Up to two Mbytes of RAM, expandable to 7.4 Mbytes, provides the facility required to produce multiple graphic images and large graphics databases.

System rental prices begin at £190 per week for short-term.

Microlease (CW), Forbes House, Whitefriars Estate, Tudor Road, Harrow, Middlesex. Tel: 01-427 8822.



The HP9836C colour graphics microcomputer.

Data system with built-in intelligence

A LOW-COST data acquisition, storage and alarm annunciation system with built-in microprocessor-based intelligence to allow remote unmanned operation has been developed by Atlantic Instruments.

Datalink is a system packaged in a rugged cabinet for use in rigorous industrial environments, and offers up to 48 hours' battery back-up to retain the integrity of stored data in the event of mains failure.

Data can be stored locally for up to 24 hours, and a built-in auto-call/auto-answer modem allows stored data to be transmitted via the public switched telephone network at 1200 baud or a radio-telemetry link at rates of up to 19kbaud.

Atlantic Instruments (CW), Unit 1, Minto Avenue, Aberdeen. Tel: (0224) 895024.

Colour copy in 60 seconds

A THERMAL printer that can produce colour paper hard copy or overhead transparencies in less than 60 seconds, is the claim of Ramtek Corp.

Operating as a peripheral to all of the firm's terminal products, the Model 4111 Colourgraphic Printer produces an exact duplicate of the image on the CRT screen. Each dot on the hard copy corresponds to the CRT screen's 640x480 pixel resolution. The screen image is reproduced at a 160x120mm size, in about 45 seconds, on paper or as an overhead transparency.

Ramtek (CW) Snamprogetti House, Basing View, Basingstoke, Hants RG21 2YY. Tel: (0256) 69541.

The Wayne Kerr Datum Artworker printed circuit design machine.

Drawing board of the Eighties

THE Artworker is described as the modern equivalent of the conventional designer's drawing board. It provides the designer with 17 *layers of drafting film, each* registered one above the other.

Using the system's joystick control, clearly labelled function keys and an x:y position indicator, tracks, pads, pad sets and text can be positioned on these layers.

The Artworker, from Wayne Kerr Datum, automatically positions the symbols on to the precision grid maintained by the system. As the lay-out is developed it is accurately displayed on the video screen.

Wayne Kerr Datum (CW), Woolborough Lane, Crawley RH10 2UG. Tel: (0293) 543266.

Marconi plays its Ace

MARCONI Communication Systems, has introduced a new switching device to automate the routing, testing and supervision of individual 64 Kbit/s timeslots within digital networks.

Known as Ace Automated Cross-connect Equipment it enables common carriers to provide flexible, reliable and cost-effective digital leased line services for both speech and data applications.

It can also be used to relieve the real time load on existing digital switches by taking over the dedicated traffic, and to provide digital test access within digital networks.

The switch connections are set up using local VDU terminals, with the connection state held in a non-volatile memory. Any number of Aces may be controlled remotely from a centre which is able to find routes, to re-route, and to undertake remote testing as well as monitoring the status of all connections.

Marconi Communication Systems (CW), Marconi House, New Street, Chelmsford CM1 1PL. Tel: (0245) 353221.

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as detailed in the outline programme. Full information on the speakers and their topics available on request, and will be sent to all attendees upon registration.

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The alternatives – desk research, a multitude of less comprehensive meetings, a dozen or so wearisome exhibitions, and time spent with equipment suppliers' representatives – cannot be as efficient or as definitive as this PLAN IT84 conference.

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Conference Programme

7 February 1984

Day 1 Morning

Chairman's introduction
David Fairbairn, Director, NCC

Most significant trends
Mike Reidy, Senior Consultant, IDC Europa

Systems Architecture – the options
Will Zachmann, Vice President, Corporate Research, IDC
Single, tandem or multiple processing
Choice of operating systems for multiple processors
Separation of data handling procedures
(database, dataflow, file servers)

Afternoon

Chairman's introduction
David Craver, Editor, Computer Weekly

User Software – the options
Reg Boot, Group Director, Training and Software, NCC+Research IDC
Package or custom
Choice of software development tools and standard methodology
Fons Kuypers, Consultant, IDC
Are program generators viable and usable?
Expert systems for users?

Human Interface – the options
David Hebditch, Consultant
Keyboard/voice input; multifunction workstations; computer graphics
What value are multifunction workstations (LISA etc)?
Are computer graphics important, is colour necessary and how important is resolution?

8 February 1984

Day 2 Morning

Chairman's introduction
Peter Rowell, President, IDC, USA

Human resource – the facts
Dr John A. G. Thomas, Publishing Director, Computer Weekly
Deputy Managing Director, Electrical-Electronic Press.
John Griffith, Group Director, NCC
Salaries and trends;
staff turnover, finding, training and keeping good staff;
role of the IT supremo; concept of the Information Centre

Communications – the options – 1
Martin Healey, Professor of Microprocessor Engineering, University College, Cardiff
Local Area Networks Star. Ring. Ethernet.

Afternoon

Chairman's introduction
David Fairbairn, Director, NCC

Communications – the options – 2
Professor Martin Healey
Dr. Peter Scott, Senior Consultant, Product Strategy Group, NCC
Wide Area Networks (WAN)
Location of people, data and processing
The modern PABX
Appropriate protocols for Viewdata
Teletex
The standards issue
Keith Bartlett, DOTI
Intercept Strategy
Users of the world UNITE!

Panel Discussion

Application of AI – the options
Brian Oakley, Director, Alvey Programme

Chairman's Summary

Full conference details will be sent to all delegates upon registration, complete with accommodation and travel arrangements. The conference fee of £365 + £54.75 VAT includes morning coffee, full lunch and afternoon tea on both days, as well as documentation.

The Information Technology Planning Conference 1984 – PLAN IT84 – is backed by and utilises the resources of Computer Weekly, the National Computing Centre and IDC Europa.

PLAN IT84 Conference, Seminars Administration, National Computing Centre Ltd, Oxford Road, Manchester M1

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PRODUCTS

The System 1250 colour graphic display system.

User can specify 16 screen colours

A HIGH performance, colour raster graphic display system that emulates the IBM 3250 graphic display system is how Spectragraphics describes its new System 1250. It operates with IBM 3250 compatible graphics software such as Cadam, Cadam-Prance, etc.

The system will perform on a variety of applications including CAD/CAM, signal processing, mapping, command and control, simulation, facilities layout, circuit board layout and numerical control.

System 1250 is claimed to provide users with the fastest pixel conversion rate available to the industry.

Spectragraphics has expanded the 3250 order set to perform additional operations. For example, a user can specify 16 screen colours from a 4096 colour palette by varying the intensity of each colour to achieve the desired scheme. Vectors, points, and characters can be selected for colour as well as objects such as polygons, circles, and rectangles which can be filled with colour.

The expanded order set allows users to generate "fat" lines and large points.

In addition, users have the ability to overlay more than one picture at a time. The combined overlays can be treated as one picture allowing the user to interact with the individual layers. This is an effective technique for design of printed circuit boards. Character spacing and line type pattern spacing can also be generated using the expanded 3250 set.

The System 1250 consists of three units: The channel controller in either local or remote configurations; the display controller for black and white or colour displays; and the display station with interactive devices and console.

The light pen is a key interactive device. It is activated when the user presses the pen against the CRT.

A light sensitive device generates a signal to the host application program.

The alphanumeric keyboard is a detachable input device that composes and updates alphanumeric text on the screen. There are 108 EBCDIC characters including special engineering symbols and a 0-9 numeric keypad. A click key is used to confirm acceptance of a depressed key.

The program function keyboard has 32 back-lit keys providing two-way communication between the user and the host program. The user defines the functions for the keyboard from the application program and uses overlays to show the functions of individual keys.

Spectragraphics (CW), 10260 Sorrento Valley Road, San Diego, California 92121. Tel: 619 450-0611.

Investment system works on basis of multi-current

ARBAT has announced a comprehensive Investment Management System (IMS) which it says provides all the facilities necessary to run a securities trading department.

The IMS may be run as a standalone system, or integrated with Arbat's Series 700 International Banking System for a bank or investment house wishing to run a consolidated internal information and decision support service.

It can be integrated with the Control Data international timesharing network for stock price and dividend information.

The system is divided into modules, which allow a bank to start with a basic dealing function and build on other applications such as accounting or valuations.

The modules are: Investment dealing, investment accounting, valuations, investment management information, market information, and additional investment facilities.

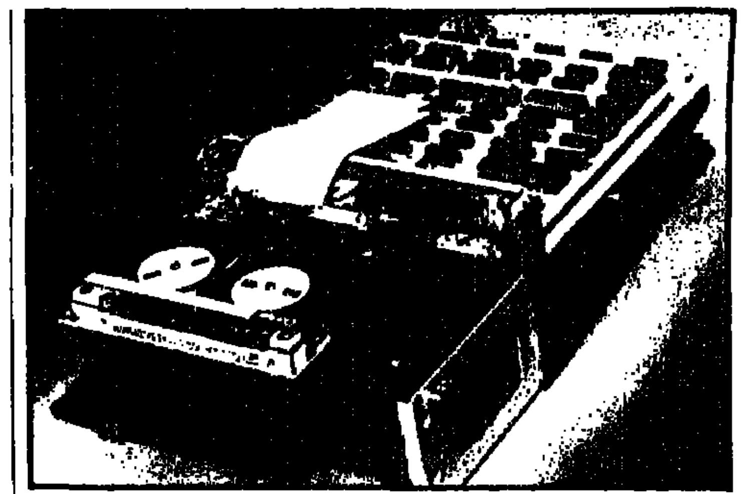
The investment dealing module provides the basis for the whole system and is a requirement for all the others, each of which is independent and can be implemented as required, and works on a multicurrency basis.

Chris Manderson, Arbat's international marketing director, commented: "In its basic form, the IMS provides comprehensive client, stock and depot control and flexible dealing facilities. With the full complement of modules, it becomes a complete portfolio management system."

The Investment Management System is available to run on the DEC Vax family of computers using the DEC standard VMS operating system, as well as the PDP-11 range of computers.

The introduction of the IMS brings the number of integratable application modules in the Series 700 range to a total of 19.

Arbat (CW), 160 Queen Victoria Street, London EC4. Tel: 01-248 6499.



The Quantex Model 410 streaming cartridge tape system.

High capacity back-up

A NEW streaming cartridge tape system, the Quantex Model 410, provides data back-up for Winchester discs in the 30 Mbyte and higher range.

The system is mounting compatible with industry standard 8in disc drives and electrically compatible with the QIC streamer interface. Using 9-track serpentine recording the Model 410 has a capacity of 45 Mbytes of formatted data on a standard DC300XL cartridge and a potential 60 Mbyte capacity with a DC600A cartridge.

Fast back-up is assured by a transfer rate of 400 Kbytes per second and a read/write tape speed of 90 inches per second.

Streaming speeds are maintained during write re-try sequences while the block format and communications protocol allow for random access of each track.

Euro Electronics (CW), Twyman House, 31 Camden Road, London NW1 1YE. Tel: 01-267 5416.

The GCS 9178 Model 1 terminal with IBM 3270 compatible keyboard.

New terminal range

GCS Communications is launching in the UK the first of a new range of terminals jointly developed by GCS and Televideo for the IBM 3270 marketplace.

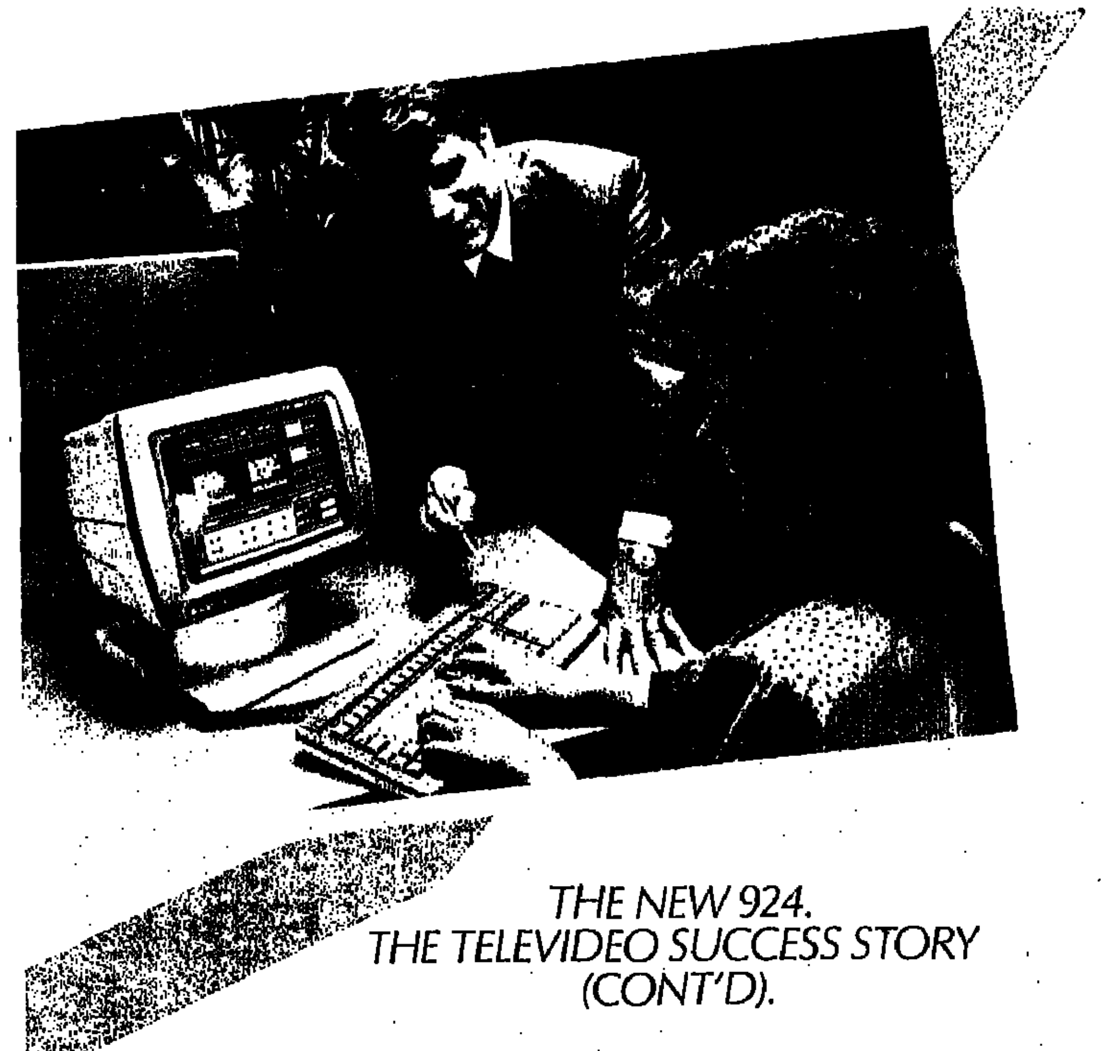
The new terminal, the 9178 Model 1, is based on the Televideo 915, and offers features similar to those of an IBM 3178/3278 and costs £745.

Designed with user productivity a prime consideration, it features a non-glare high contrast green CRT with tilt and swivel and a 3178/3278 compatible low profile DIN standard 87-key keyboard which aims to minimise operator fatigue.

A local printer port is standard, providing a facility for all terminal users to produce a hard copy of their terminal display on a low-cost printer.

The GCS 9178 Model 1 is intended for users who wish to complement their existing 3270 networks with connection via the GCS Series II cluster controller.

GCS Communications (CW), Orion Park, 226-236 Northfield Ave, London W13 9QU. Tel: 01-579 9401.



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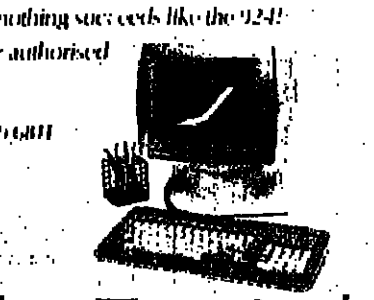

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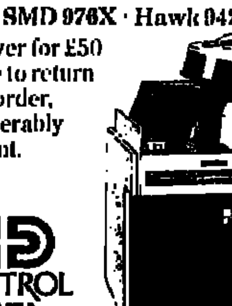

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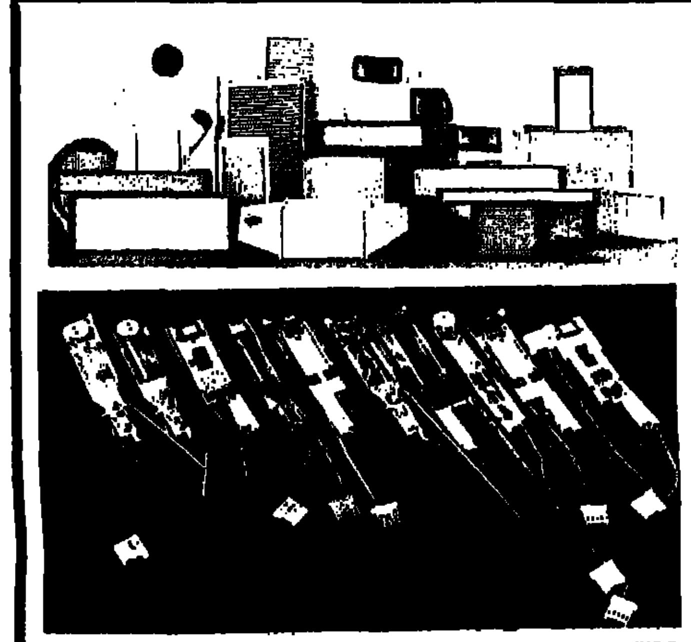

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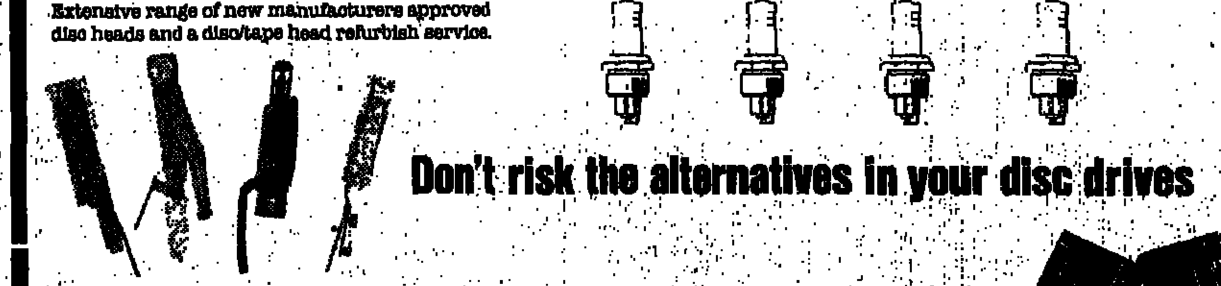

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Full training on the PICK operating system and database will be given, if necessary.

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Find out more – phone Knight on 01-491 4706 quoting ref GKW610.

Analyst/Programmer

(New Univac 1170 Installation)

Essex/London Border — **£10,500 + Attractive Benefits**

Silcock and Colling are recognised pioneers of the car and commercial vehicle transportation industry backed by a strong young management team.

Their computer services division is an integral part of their fast moving operation. This covers a comprehensive range of commercial and real time applications based on their Univac 90/30 computer which is currently being replaced by a more powerful 1170.

The Analyst/Programmer must have a broad commercial data processing background which must include some analytical skills as well as COBOL programming. Knowledge of Assembler would be an advantage.

Silcock and Colling believe in maximising people's abilities and the successful candidate can expect a rewarding and exciting future.

In addition, the benefits include low cost petrol, a car leasing scheme, free health insurance and a share option scheme.

Find out more – contact Knight on 01-491 4706 quoting ref YYW204.

Silcock and Colling

Project Leader

(Life Assurance)

Hertfordshire — **£13,000 to £15,000 + Excellent Benefits**

Provident Mutual is a well-established and progressive Life Assurance company. The Management Services department plays a key role in a variety of planned DP projects which place advanced computer systems at the heart of the Association's administration.

To continue their policy of expansion, Provident Mutual is seeking a professional who can demonstrate leadership qualities as well as the following experience:

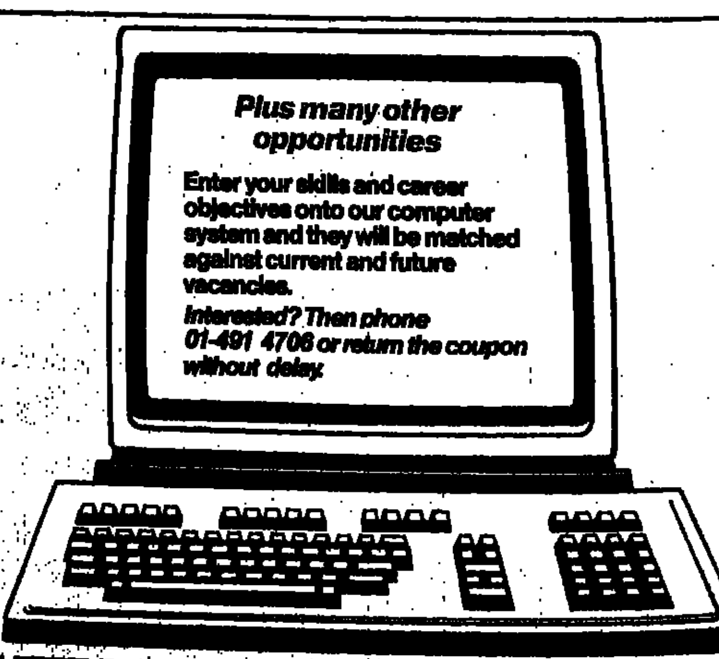
* **Life Assurance, preferably Pensions**
* **Major project control**
* **Strong analytical skills**
* **On-line system design**
* **Programming background (COBOL useful)**

The successful candidate will lead a multi-discipline team on projects involving both on-line and batch systems with good opportunities for advancement.

The benefits package includes concessionary mortgage facilities, non-contributory pension scheme, free Life Assurance, free lunches, subsidised BUPA, flexitime and relocation expenses.

Find out more – contact Knight on 01-491 4706 quoting ref YYW203.

PROVIDENT MUTUAL LIFE ASSURANCE ASSOCIATION



Knight

01-491 4706

24 Hours

Knight Computer Services Ltd

14 Old Park Lane, London W1Y 4NL

PART OF THE HUNTERSKIL GROUP

Return to:
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Knight Computer Services Limited, Recruitment Division, Free Post 16, W1E 8JZ.

Name ______
Address ______
Tel no (Home) ______ (Work) ______
Position Sought ______
Date[illegible]

CW

Your future with Logica

In fourteen years Logica has become one of Europe's leading companies in real-time computing, communications and office automation, initiating new technological developments in each of these fields.

Any company at the forefront of technology needs the constant injection of new ideas, new skills, new talents. Which is where you come in. Outlines of our current career opportunities are listed below: if you want to be involved in an exciting, dynamic environment, and reap the rewards such involvement brings, this advertisement is aimed at you.

Logica VTS

Our office automation and distributed products company is at the leading edge of technological development in this competitive market. We are currently involved in the design, manufacture and marketing of word processing and personal computing products, including advanced networked systems.

Hardware Design Engineer
If you have a degree plus 3-4 years' experience in digital/microprocessor design for volume production in a competitive environment, here is your chance to contribute to an advanced Workstation Development project. We are particularly interested in hearing from people with communications, networks or bit-mapped colour display skills.
Swindon based
Salary: to £12,000 p.a. Ref: HDE/VTS/CW

Software Design Engineer
We are developing an advanced user interface for a high volume office system application. Your participation will be welcomed if you have a degree and 2-3 years' experience in the design/development of real-time software with an emphasis on the human interface. If you have text processing systems experience, so much the better.
Swindon or London based
Salary: to £10,000 p.a. Ref: SDE/VTS/CW

Research Projects

To ensure that Logica remains abreast of the latest software engineering technology, we maintain a small central team which participates in work carried out under national and international R & D programmes. To augment the existing team, we are now seeking a small number of

Software Engineering Consultants
with specific experience of the development and/or use of advanced software engineering tools and methods in a range of environments. They should also combine the initiative and professionalism needed to introduce new methods into an organisation.
Salary: to £17,000 p.a. Ref: SEC/RP/CW

Aerospace Group

Our work in the civil and military aerospace sectors is expanding rapidly and we provide a full range of professional services from strategic studies to turnkey system supplies.

We have participated in many European Satellite programmes with contracts for both onboard and ground segment processing. Our military activity includes avionics systems, simulations, communication networks and data security. Our principal skills are system building, image processing, speech recognition and artificial intelligence.

To meet our expanding activities we are seeking to recruit:

- **communication systems designers,** particularly with experience of TDMA, packet-switching and ISO levels 1-7
- **digital engineers** for high performance processors
- **consultants and designers** for artificial intelligence and speech processing.

Salary: to £17,000 p.a. Ref: AG/CW

Logica Inc — San Francisco

Our US company, Logica Inc, is growing rapidly in the world's most developed computer and communications market. We have offices in New York, Boston, San Francisco and Orlando, Florida and interesting projects throughout the United States. We have a range of opportunities but in particular we are seeking

Systems Professionals
with at least one years' experience on Tandem hardware to participate in the development of advanced Electronic Funds Transfer systems in San Francisco. A knowledge of TAL and PATHWAY is essential. A banking background would be an advantage. You will be trained in the use of Logica's FASTRX systems software on Tandem.
An attractive US salary is offered. Ref: SP/LI/CW

Industry Group

Our work in the energy public utilities and manufacturing sectors involves supplying total systems and related services. Applications cover industrial plant/process control systems and special purpose micro-based systems. We now need additional

Real-time Systems Designers/Programmers
who have a good degree in Computing, Maths, Science or Engineering and 2-5 years experience of real-time systems implementation, preferably using DEC/HP/microcomputers. Experience in one or more of the following areas would be especially relevant:- real-time data acquisition and control systems; technical microprocessor applications; data communications; manufacturing systems.
Salary: to £13,000 p.a. Ref: RSD/IG/CW

Database Products Group

We develop and market RAPPORT, our sophisticated relational database management product. Its continuing success has created these new positions:

Microcomputer specialists
to develop database software for the latest ranges of microcomputer. As well as 2 years' experience of microcomputers and their operating systems (MSDOS, UNIX* or CP/M 86), you will need a detailed knowledge of FORTRAN and familiarity with Assembler.
*UNIX is a trademark of Bell Laboratories

Software Designers
to assist in the planning and development of a range of new database products. You should have detailed knowledge of FORTRAN and experience of programming in a structured language. Opportunities also exist for more senior applicants with project leading experience.

Sales Support Consultants
To provide advice on all aspects of database management to UK and overseas sales teams. You will need at least 2 years' experience of database systems (preferably relational) in a FORTRAN or COBOL environment. Experience of several popular mini/mainframe computers would be an asset.
Salary: to £13,000 p.a. Ref: DPG/CW

Prospects for the right people are unparalleled. The company offers excellent working facilities in a professional, challenging environment, and a generous benefits package including assistance with relocation where applicable.

We have indicated some of the positions available, but there are other opportunities. If your own discipline is not listed do not hesitate to contact us.

Please write with full CV and quoting relevant reference number to: Julia Hall, LOGICA, 64 Newman Street, London, W1A 4SE, or telephone 01-636 5454.

logica

ANALYST PROGRAMMERS
Norfolk

Buxted is the largest producer of poultry in the UK. Based in Norwich at the heart of rural East Anglia, the company is committed to the development of business systems across a wide range of activities. Vacancies exist for two analyst programmers working in separate teams covering a variety of projects within the sales and production activities in the company.

If you have a background in commercial systems and are either an experienced analyst programmer or a programmer in any high level language itching to show that you are capable of taking on more responsibility, then you could be the person we are looking for.

Computing facilities are based around a powerful Datapoint RMS, ARC mainframe and mini computer local area network in the Norwich Head Office, with 600MB of disc and 14 application processors with a total of 5MB memory. Sales offices and depots are connected by a multiple or network to the centre and satellite minicomputers have recently been installed at its regional production centres. Language and equipment re-training will be given where required.

Buxted offer an attractive negotiable package including relocation expenses where applicable.

Please apply in writing to David Taylor, Company Personnel Manager,

Buxted Poultry Limited,
61/66 Rose Lane,
Norwich,
Norfolk NR1 1PU.

Buxted

(81711)

SNR SYSTEMS ANALYST /ANALYST PROGRAMMER
Herts/Essex Border to £12,000

International Distillers and Vintners (I.D.V.), part of the Grand Metropolitan Group, commenced a major investment program to bring DP services in house two years ago. To maintain the impetus of development they now need two additional experienced systems professionals.

Based at the central office you will join a small dedicated team working directly with the users on the development and implementation of major commercial systems. Hardware is an IBM 4341 group 2 running under DOS/VSE with Data General Novas and Eclipses in the distribution centres. The programming language is Cobol with extensive use of CICS and DL/1.

To rise to the challenge of working within this exciting environment you *should have had around four years total DP experience covering both* programming and systems. Exposure to CICS and DL/1 would be a considerable advantage, however, the major requirement is for business awareness. Applicants who have not had this experience but who believe they can mature in this dynamic environment should apply as opportunities exist at slightly lower level.

The benefits of living and working in this pleasant rural environment do not stop with the challenge of the DP department. The company recognises that employees have a life outside the 9-5 routine and the additional benefits cover holidays, travel and product discounts. There is a subsidised restaurant, and bar, on site and a very active sports and social club.

Ring David Mason Johns at KPG or on 01-747 0989 to arrange an early interview in London or Hertfordshire/Essex.

Please quote Ref. 8228/CW.

KPG
01-948 5922
KPG Computer Support Services Limited
Cobden House, Park Lane,
Richmond, Surrey, TW9 2RA

Build Your Career On Our Success

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- ★ ***Analyst/Programmers***
- ★ ***Salaries £8,000-£10,500***
- ★ ***Profit Share***
- ★ ***First Class Benefits***
- ★ ***Birmingham***

We are one of the *fastest expanding Computer Service Companies in the UK*, the wholly owned subsidiary of a highly successful, diverse International Group with a turnover of over £600m. With a nationwide SNA network that includes 350 terminals and seven IBM 8100 local processors, our skills in the areas of systems programming and network management are highly developed. Our CICS system has been described as one of the most complex in Europe. Our Principal processor is an IBM 3033 operating under MVS, and using CICS, DL1 and TSO. Our growth plan is based on IBM's large system strategy. In the application area we now develop systems under full IMS and in fact 50% of our work now comes from outside the Group from a very wide customer base.

As the result of our expansion, we can now offer outstanding opportunities to young COBOL Programmers and Analyst/Programmers with between two and five years experience in an IBM environment. Probably Graduates, the successful candidates will certainly have the confidence and ability to identify with users and effectively to solve their problems. Our standards are high, but we are quick to identify potential and offer superb prospects for the future.

The excellent remuneration package includes contributory pension, profit share, comprehensive medical facilities, subsidised canteen and 25 days annual leave. If you feel that you could build your career on our success, please telephone **Jim Mitchell** on **021 236 3781** (24 hour answering service) or on **021 455 7653** (evenings and weekends until 9.00 p.m.)

Technical, Sales & Management Appointments

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James House, 46 James Street,
London W1M 5HS
01-935 0671/486 0461

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35-37 Great Charles Street,
Queensway, Birmingham B3 3JY
021-236 3781

NORTH
International House, 84 Deansgate,
Manchester M3 2ER
061-833 0427

BELGIUM
Avenue Louise 327,
Boite 4, 1050 Bruxelles
010 322-640 7151/71

HOLLAND
Willemsparkweg 92,
1071 H.M. Amsterdam
010 3120-706947

YOUNG PROGRAMMERS
Variety is the fact of life – in Croydon

'Nescafé', 'Ideal', 'Crosse & Blackwell', 'Branston', 'Maggi', 'Chef', 'Libby's', 'Findus'. All famous brand names, and all part of one of the world's major food manufacturers. Each providing a tremendous variety of work for young programming professionals in areas such as Buying, Manufacturing, Marketing, Sales, Distribution and Finance.

If you have at least eighteen months' COBOL experience in an IBM environment, then you could be one of the programmers we are seeking to work on Project Development.

Take a look at the career package we are offering –

- ★ An opportunity to develop your technical skills, particularly in CICS and DL/1
- ★ A genuine friendly working environment
- ★ A company where professional skills are recognised, respected – and rewarded
- ★ You will be based in Croydon – considered to be one of the finest centres in the South of England for Business, Shopping facilities, Entertainment and the Arts
- ★ Excellent competitive salaries plus flextime, 22 days holiday a year, subsidised restaurant and a contributory pension scheme.

Put some spice into your career with Nestlé. Contact Jenny Clark, The Nestlé Company Ltd, St George's House, Croydon, Surrey. Telephone: 01-686 3333 (ext. 2299).

(6536)

Nestlé

Hardware & Software Development Engineers
£9K to £14K pa plus Relocation

My Client offers superb opportunities to join a successful and expanding British company, which is a market leader in the design and manufacture of microcomputer systems. Located in an area having the benefits of both countryside and coast, the purpose-built premises provide state-of-the-art development tools and facilities.

Hardware Engineers—Applicants should have completed at least 2 years post-graduate work in development which includes wide-ranging microprocessor experience; 8086 and 6809 would be ideal. Projects require quality design for high volume production, and applicants experienced in working to commercial time-scales are preferred. All engineers should demonstrate flexibility and commitment and enjoy a significant technical role.

Software Engineers—Applicants should have considerable Assembler programming and microprocessor experience; 8086 preferred. In addition UNIX and 'C', and a knowledge of hardware would be desirable. Ideally, from a systems programming background, your experience will include, analysis work, operating systems and the design of software tools.

If you are seeking an outstanding career opportunity please write to me, Barrie Witt at the address below; enclosing your CV, or telephone me for further information and/or an application form, office hours 0905 611512, evenings and weekends 06845 66477.

Computer Personnel & Executive Development Associates Ltd.
Old Bank House, Bank Street, Worcester, WR1 2EW

Programming & Systems Ltd.

CONTRACTS

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	Ref:
Nixdorf 8870 BASIC	589 JM
HP 3000 RAPID	554 JM
TANDEM COBOL	552 NL
IBM FORTRAN MVS	575 JM
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ICL 2900 COBOL VME VMEB SCL	584 NL

ANALYST/PROGRAMMERS

IBM PL1 URGENT	420 MB
IBM System 38	380 SH
IBM 4341 COBOL ASSEMBLER DOS VSE Real-time SHADOWS	557 NL
IBM System 34 RPG II	562 JM
DEC COBOL RSTS RT11	571 NL
Z8000 PASCAL or 'C'	592 NL

SYSTEMS PROGRAMMERS

IBM ASSEMBLER DOS VSE	580 NL

For further information ring (02403) 22201
H. Programming & Systems Ltd, Plymouth House
7 London Road, Amersham, Bucks HP7 0HE

(6118)

THE HUNTERSKIL GROUP

DEC VAX
SYSTEM MANAGER/ PROGRAMMER
To £11K + profit share Berkshire

A key position within the world leader of telecommunications test systems is offered to an ambitious programmer with the ability to co-ordinate and resource manage a DEC VAX 11-750, the central core of the company's activities within the UK.

The ideal candidate will be: –

- 24 to 30 years of age
- Experienced in programming within a VAX environment using Pascal or 'C'.
- Familiar with DEC equipment and Assembly language

The responsibilities would be the complete management of the computing centre, including supplier interface, office procedures, library scheduling and data exchange with U.S. link. Some experience of Software production and test would be an advantage within an atmosphere of rapid expansion due to demand for the Company's products throughout Europe. The package includes generous salary, large company benefits and specialist product training in either the USA or Europe.

For an initial and confidential discussion please call Bob Archibold on Newbury (0635) 33445 quoting reference W/141CW or write in strict confidence to: –

ARC

ARCHIBOLD RAE CONSULTANTS LIMITED
(High Technology Search & Selection),
7, London Road, Newbury, Berkshire RG13 1JL.
Tel: Newbury (0635) 33445.

Software Engineers for Industrial Applications

Outgrown your environment?

Berkshire **£11,000-£16,500**

Are you looking for a truly progressive environment in which you can fully utilize your talents? An environment which encourages and rewards achievements directly and can offer software engineers real and early responsibility leading projects involving manufacturing, production control and information systems?

This exists within an independent and profitable division of one of the most successful privately owned group of companies in the world where structured design and programming techniques are used in a wide variety of real-time systems.

Future projects include the design of a factory based LAN and office automation system. A large number of user groups ensures a fast-moving environment and diverse technical challenges.

Thus, good communication skills, a high level of motivation and a degree of personal ambition are all qualities necessary to thrive in this exciting and rewarding atmosphere.

The only other requirements are a good honours degree, at least 2 years' experience of real-time systems and at least 2 of the following:

VAX/VMS — Industrial Applications
PASCAL/CORAL/RTL2 — Relational Databases

An excellent benefits package is offered including: non contributory pension and life assurance schemes, paid overtime, substantial bonus, full relocation assistance and a comprehensive career development scheme including regular salary reviews.

So, if you are looking for an unparalleled opportunity for growth, call Peter Hatherley on **01-938 1804** or write to him with a curriculum vitae.

IP **Information Processing People**
Specialist Recruitment Consultants
20 Kensington Church Street, London W8 4EP
Telephone 01-938 1804 Telex 22861

(6194)

ATTENTION ALL DP MANAGERS

Recruiting new personnel?

Then don't miss the No.1 Recruitment Opportunity of 1983

November 10, 1983 will be a red letter day for anyone recruiting DP professionals

WHY?

Because the November 10 issue of Computer Weekly will carry a special Recruitment & Education Supplement — that will be sought after and read by all career-conscious computer professionals.

And because the November 10 issue of Computer Weekly will reach more computer professionals than any other issue of Computer Weekly — *or of any other computer journal* — in 1983.

In addition to its normal circulation of 125,000+, THE BIGGEST CIRCULATION OF ANY UK COMPUTER PUBLICATION — this issue of Computer Weekly will be distributed from its stand at Compec '83 at Olympia on November 15-18.

COMPEC '83 is Britain's biggest computer exhibition. Last year it was attended by 32,000 key computer personnel. This year we're expecting even more! The November 10 issue of Computer Weekly will reach all these people! In the COMPUTER WEEKLY Recruitment & Education Supplement you will reach the maximum number of quality computer professionals. On every count, it's the No. 1 recruitment opportunity of 1983!

Make sure you don't miss it!
Phone 01-661 8080 now!

Computer Weekly
RECRUITMENT & EDUCATION SUPPLEMENT
NOVEMBER 10

SYSTEMS ANALYSIS

CENTRAL LONDON up to £12,000

DOES THIS OPENING MEET YOUR CAREER REQUIREMENTS?

- ☐ **MODERN TECHNIQUES:** database, on line and communications systems; high standards
- ☐ **FORMAL TRAINING:** a planned programme to enhance your skills
- ☐ **PURE ANALYSIS:** with a good proportion of development work, entirely in London
- ☐ **VARIETY:** mainframe, minis and micros; projects ranging from small to very big; team or individual responsibility
- ☐ **PROSPECTS:** very sound, in a busy installation, with ample new projects and opportunities for advancement.

This opportunity will interest either

- ☐ **SYSTEMS ANALYSTS** with upwards of two years' analysis experience (the application background is not critical, as our clients will provide retraining where necessary), or
- ☐ **ANALYST/PROGRAMMERS** who wish to move to systems analysis work.

If you feel that a move to a major, up-market installation would help your career, please ring us in confidence for a talk, quoting ref. 191. If it is more convenient for you to ring outside office hours, your message will be recorded.

(6179)

EDP SYSTEMS 01-637 5796
52-53 Margaret St. London W1N 7FF

Telecomms. Consultants
L'don/Herts. £15K-£20K
Some of the qualities we are seeking for these positions are: flexibility, mobility, leadership, self reliance and initiative. If you feel you can match these qualities and have technical experience from: comms., networking, real-time systems, simulation, database systems or systems software we need to hear from you quickly. Excellent prospects. Company benefits include reloc. assistance where appropriate.

Electronics Designers
N.H. Counties to £14,000
We would like to hear from candidates who can demonstrate an in-depth awareness of the application of micro processors to the solution of technical problems. As senior designers you will work with the minimum of supervision either alone or with a junior engineer on a variety of projects. Some programming expertise would be very useful.

Principal S/W Engineer
Manchester c£11,000
Our client is seeking a person who can lead and co-ordinate software development in the field of Safety Systems, working with a small team of electronics engineers with micro processor experience.
Candidates must be conversant with Motorola 6800 and Tektronix MDS, ideally they will be graduates in electronics or computer science and be aged 27 to 35.

Micro Sys. Software
Berks. to £14,000
This company has established an international reputation for its micro software products. It has been innovative in development and aggressive in marketing. Success means further expansion to maintain its lead. Contact us if you have experience with 'C' (or similar) and assembler working on micro/mini systems software. Compiler experience very attractive.

Manager R-T Software
Herts. to £16,000
You will be responsible for three teams of software engineers developing real-time applications mainly based on Intel 8080/8088 micros. As well as supervisory experience we would expect candidates to be competent in a block structured language and to have a sound appreciation of micro electronics. Benefits include relocation assistance where appropriate.

UNIX Sales Support
London to £15K + car
This is an unusual opportunity for a technical person to achieve an income commensurate with a salesman. Our client is offering commission incentives to UNIX experts who will provide the sales team with the necessary support when clients' needs require detailed knowledge of the internals of UNIX. The company is large, international and successful.

OEM S'ware Support
Bucks. to £17,000 + car
We wish to hear from young (25 to 30), high-flyers who have the experience and flair to provide support to a range of clients. You will need to talk comms. protocols, be capable of reading a COBOL or assembler listing and be prepared to tackle anything. This company's products are leading the way in many international markets.

Principal IBM Consultants
London to £20,000
We would like to hear from candidates who have extensive technical experience in a range of IBM systems software: eg. MVS, VM/CMS, VSE, IMS, DL/1, SNA, CICS, etc. Previous consultancy and project management experience desirable. You must be highly presentable, commercially aware and astute with well developed personal communications skills.

Proj. Leader Compiler Dev.
Herts. c£14,000
Our client, a major international company, with a successful track record in Distributed Data Processing systems, wishes to appoint a new Project Leader of compiler development. Ideally previous design experience on a COBOL compiler implementation project but others accepted as relevant. Leadership skills and up-to-date awareness of structured design and programming methods desirable.

Analyst Programmers
London to £12K + bonus
Interesting and varied projects in store for you with this client. INFO (relational DBMS) used for turnkey applications for a range of customers. Analysis skills important for pre-sales work. Ideally candidates will be commercial programmers used to working to deadlines. PRIME Fortran experience of significant interest. U.S.A. based company. Excellent benefits and prospects.

S/W Team Leaders
S. Herts. to £14,000
A promotional opportunity for programmers with real-time systems experience. Ideally candidates will have worked in an assembler and a block structured language and should be able to demonstrate an awareness of project control procedures. Any knowledge of DEC VAX and Intel 8080/8088 equipment would be useful as would an awareness of micro electronics.

Software Engineer
W. London c£11,000
Join the market leader in theatre and T.V. lighting technology. To be successful you will need previous experience at assembler level on real time systems. Development is under UNIX so 'C' or PASCAL will be very useful as would a knowledge of electronics. PDP/11, 68000 or 6809 processor experience attractive. Degree/HNC preferred. Reloc. assistance, paid overtime.

Comms. Team Leader
Surrey c£12,000
An experienced comms. software person is required to lead a small team of programmers in the design and development of comms. products on an established range of office systems. Areas of expertise required are: 2780/3780/HASP, X25 Ethernet etc., etc. Ideally you will have previous similar design experience, leadership qualities and a background with a manufacturer or software house.

DBMS for Micros
Surrey c£10,000
Ideally we would like you to have had at least 1 years experience with 'C', however, PASCAL, BCPL or similar would be acceptable. You will have the opportunity of working with MS-DOS (PC-DOS) on future developments of this successful micro based DBMS product. Previous systems software experience in file access, data management, data structure, etc. would be very useful.

Programming Enthusiasts
W. Herts. to £9,500
You will identify with this client if you are one of the many programmers bitten by the computing bug. Ideally you will have 1+ years experience at Assembler, or 3 years high level language programming. Preferred systems are DEC, PDP and/or Z80 micros. PASCAL, BASIC or PL/1 languages useful. A dynamic environment. Excellent benefits include 5 weeks hols.

S/W Quality Assurance
Herts. c£14,000
This position calls for a specialist in software quality assurance and control in a development environment. Candidates will have a relevant background gained with a systems supplier. The successful candidate will be appointed Project Leader of the Q.A. function and will, therefore, require the skills to lead and motivate a team in this area.

Marketing Support
Herts. to £10K + car
Our client is a world leader in the development of systems software for computer manufacturers and users. This new vacancy is to provide technical and marketing support to Vendors, Distributors and the Sales force. 1 to 3 years COBOL programming, knowledge of FORTRAN and BASIC and a general technical background are the essential requirements for this exciting opportunity.

IBM Systems Programmers
Herts./Bucks. £12K-£14K
We have several clients covering systems houses, manufacturers and large users all of whom require experienced IBM systems specialists. If your experience includes some of the following, please contact us: MVS, VSAM, JES2, MJE, IDMS, TSO, SPF, ACF2. Languages assembler or PL/1. Whatever your requirements we are sure we can be of assistance. Also Saudi and Swiss assignments.

Sales Support
W. Herts. c£12K + car
Candidates will require a technical background with a knowledge of hardware and software. They will assist the Account Manager with presentation proposals and client liaison. The business is computer control systems for the checkout of satellites prior to their launch. We will be looking for well presented, literate people with good personal communications skills.

Software Support
Bucks./St'chester £16K + car
Can you demonstrate previous experience in use of T.P. systems, show an in-depth awareness of operating system software, or discuss knowledgeably the aspects of communications software in distributed processing? If you measure up to this tough specification and enjoy the challenge of pre and post sales support our client will almost certainly wish to meet you.

Open letter to experienced computing staff seeking new opportunities

Our free service to you is advice and assistance in identifying the most suitable new position for the development of your career. Our consultants have held a variety of responsible positions in the computer industry. With this experience and their knowledge of the job market they are available to help you. The advertised vacancies are only a representative sample of the many that are regularly registered with us by our clients. Write or call us anytime to discuss your ideas.

Write or telephone (02403) 28383 during office hours —
We are always ready to discuss these and many other interesting positions.
Evenings and weekends only.

Terry Harvey — Great Missenden (02406) 4705
Brian Coates — Chesham (0494) 785722
John Barker — Canterbury (0227) 61297

HR **H. R. Associates Limited** **HR**
Executive Computer and Technical Recruitment Consultants
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Branch Office: Regent Street W1

Midlands maybe . . .

But the best jobs in the country for sure!

Compare your prospects to ours – Ring today – discuss the options
Join us – In the Science Park – Britain's future

Salesmen – Turnkey Systems Leads Supplied to £50,000 Birmingham, Manchester, Leeds

Tradewinner urgently need experienced, proven New Business Salesmen to capitalise on the large volume of leads we are currently generating for our Honeywell and ICL Turnkey opportunities. We have an excellent range of packages for both the mainframe and micro market, with Network capabilities and stand alone expansion capabilities. We have a fully integrated/fully range of packages from order processing to Accounts, including Stock and Purchasing, ranging also to BOMP and Payroll. Equally, we have many vertical market products.

We seek a sound understanding of application system facilities, the ability to demonstrate from a terminal and the ability to develop tenders through to a full Board Presentation.

Tradewinner have a UK reference base second to none and excellent sales demonstration and support facilities. Our demonstration standards are high. Constant marketing and exhibiting will generate ever increasing volumes of leads. We urgently need experienced New Business Closers, *with a strong emphasis on closing ability.*

Excellent salary and commission structures apply. All sales achievement claims will be fully vetted prior to employment. We are only seeking proven successful performers able to take immediate advantage of the large volume of business opportunities currently developing with us. We know our products will sell. We know the prices are attractive. We know the support is excellent. We just do not know if you are good enough to *win a job with us and deliver. If so, we know the earnings package will be* second to none and, as a Public Company subsidiary, the future potential career progression is equally considerable. You must have achieved at least £260,000 p.a. New Business sales a year before applying to us with minis or £150,000 p.a. on Micro/Minis. No trainees or juniors will be considered. Just proven monitorable performers. No more than one endorsement. We cover the whole of England as a market and will also be *appointing Franchise Dealers during the coming months.*

If you want the best Hardware/Software facilities, well-qualified leads to rapidly close and an earnings package which you could turn into a super tax case, we are your only serious UK prospect. No maximum earnings package. We are realists. We are already attacking the top 5% for many other positions. For an exciting and rewarding future ring us or send us your c.v. urgently for a meeting during the next few days to sell yourself to our management team. We are the company of the future and with public company backing, we can support the growth, can you close the opportunities we will give you fast enough?

Analyst/Programmers £6,000 to £10,000

Have you had at least three years' programming experience?
Have you had COBOL experience?
Do you know about Sales Order Processing
Stock Control
Purchase Order Processing Ledgers?
Have you used Honeywell or ICL equipment?
Are you eager to develop new skills?
Do you want to broaden your horizons?
Do you want technical challenge?
Do you want contact with your clients?
Can you meet your own committed timescales?
Do you enjoy working in a professional environment?
Do you want the rewards that you think you deserve?

If you have answered YES to most of these questions, then we have got a lot to offer each other. Contact us, NOW
Bob Tait or Jeff Forrester

Managers – Implementation £12,000 upwards plus car

Have you had at least seven years' experience in the computing industry?
Have you had experience in the following:
Sales Order Processing
Stock Control
Purchase Order Processing
Ledgers
Payroll
Vehicle Leasing?
Have you used Honeywell or ICL equipment?
Have you had COBOL programming experience, system analysis, and design experience?
Have you worked with software products before?
Do you enjoy solving problems?
Do you enjoy working with clients?
Do you think that computer systems are tools to be used to satisfy business needs?
Do you want to do feasibility studies for clients?
Do you think that ongoing support for a client is important?
Do you want to take an important role in satisfying current client needs, and in generating future business?
Do you want to lead others?
Do you want to receive the rewards that you think you deserve?
Do you want a company car?
Do you want a secure future?

If you have answered YES to most of these questions, we ought to be talking to each other. Contact us – NOW.
Bob Tait or Geoff Caine.

Managers – Sales Support £12,500 plus car & bonus

Have you worked with software products?
Do you know your products technically?
Have you had experience in the following:
Sales Order Processing
Stock Control
Purchase Order Processing
Ledgers
Payroll
Vehicle Leasing?
Have you worked in the computing industry for at least seven years, in at least two different environments?
Have you used Honeywell or ICL equipment?
Do you want to work with a successful company?
Do you want to create further success?
Do you want to satisfy clients' business needs?
Do you want to lead others?
Do you want to work with clients and potential clients?
Do you want to be in control of your own rewards?
Do you want a company car?
Do you want to be ahead of the opposition?

If you can answer YES to most of these questions, then we would like to meet you – SOON! Contact us – NOW.
John Wood or Bob Tait.

Please write enclosing details to:
John Wood or Bob Tait

TRADEWINNER SYSTEMS LIMITED

Aston Science Park
Love Lane
Birmingham B7 4BJ
Or telephone 021-359 0854

(5148)

PROGRAMMING RESOURCE MANAGEMENT

to £16,000 Surrey

for a Creative Manager with a technical background.

This is a crucial position within the UK manufacturing and marketing subsidiary of a large international group. Our client has nearly 4,000 employees within its HQ and 3 factory sites. Their computer facilities are complex and progressive with BURROUGHS large and small systems, 400 on-line terminals, sophisticated telecommunications and advanced database decision support systems.

Their central programming resource comprises some 30 staff using structured COBOL techniques on a wide range of development and maintenance work. To manage this team, our client seeks ambitious applicants with in-depth mainframe COBOL experience and, above all, the ability to motivate staff and improve performance through creative leadership.

Besides the normal aspects of work allocation and project co-ordination you will be responsible for; technological improvements using advanced development tools and programming language innovations; performance improvement through staff assessment and planned training; the overall co-ordination of other aspects of computer support by liaison with Business Analysts, Operations, Data Admin. and outside suppliers of labour and software.

If you're ready to progress from Chief Programmer or if you've simply outgrown your current programming or project management role, then we can both benefit from an early discussion.

Contact: Gordon Hunter
BEAUMONT MANAGEMENT SERVICES LTD.,
2/4 High St., Staines, Middx. 'Phone: Staines (0784) 62131 (24 hr. ansaphone)

BEAUMONT MANAGEMENT SERVICES LTD.

(5071)

SENIOR APPOINTMENTS – £14K +

Partners in Progress

You and Sun Alliance

As one of the largest composite insurance groups in the UK, Sun Alliance offers ambitious and professional data processing staff all the ingredients for a successful and satisfying career.

- A secure and expanding business environment
- Substantial investment in advanced technology
- Modern office and social facilities in rural Sussex
- Major commitment to innovative systems development
- Progressive personnel policy
- Substantial opportunities for career advancement

SUN ALLIANCE INSURANCE GROUP

As part of a phased systems development strategy, we have an immediate requirement for various categories of high calibre staff.

PROJECT MANAGERS to £16,000

To lead substantial staff resources through all stages of systems development. Business systems development experience in the financial sector is strongly preferred. An in-depth d.p. background is essential as is the ability to liaise successfully at senior management level. Ref. GW 1161/1.

PROJECT LEADERS to £14,000

To take individual project responsibility or lead the development of substantial segments of large scale applications. A strong overall technical background is required emphasising computer systems design, and financial sector experience is preferred. Ref. GW 1161/2.

DEVELOPMENT STAFF to £11,500

To work on a variety of applications, in the areas of computer systems design, advanced programming and business systems analysis. Experience of the IBM 30XX or 8100 ranges of equipment, and IMS DB/DC or DPPX, is preferred, with at least three years' sound technical experience. Ref. GW 1161/3.

In addition to the salaries as quoted, successful candidates will enjoy a comprehensive range of benefits including non-contributory pension, subsidised restaurant and where appropriate, mortgage allowance. Assistance may be given with relocation expenses, in appropriate cases.

To apply please send a CV, or write or telephone for an application form to JOHN KITCHEN, at the address below, quoting the appropriate reference.

(6979)

BIS Applied Systems Limited
York House, 199 Westminster Bridge Road
London SE1 7UT
Telephone 01-633 0866

BIS Applied Systems

BRANCH MANAGER

(SALES BACKGROUND)

APPLICATION PACKAGES

c. £30,000

"To manage and grow a major part of the business of a highly successful company."

- **Prime U.K. Territory**
- **Choice of Company Car**
- **c. £15K Base Salary**
- **Excellent Guarantee**

Our client is a major supplier of applications software to users of the IBM System/34, System/36 and System/38 range of equipment. With a uniquely wide range of integrated application packages the company is extremely successful and expanding rapidly.

The company's Headquarters is outside the Home Counties, but in excess of 50% of its turnover comes from customers within this area. To capitalise on this success and to manage the branch which consists of a small sales and high calibre support team, we are looking for a good manager with a proven sales record. At present the company covers London and the South East from offices in Central London but it will shortly be moving into a new branch office just south of the M4.

Ideal applicants will have at least two years experience of commercial applications and a record of sales achievement.

This is a genuine profit-centre responsible position. We are however looking for individuals who will continue to generate revenue both personally and by growing the sales force. In return the company offers genuine career prospects and the opportunity to become a major part of an extremely successful business.

For further details telephone Kevin McCourt at our Reading Office or write enclosing full c.v. Interviews will be held in Central London and Reading.

MCL McCOURT COUSINS LTD.

27-29 Greyfriars Road, Reading, Berkshire Telephone (0734) 595346 (24 hours)

Chesham House, 150 Regent Street, London W1R 5FA Telephone 01-439 6288

SENIOR APPOINTMENTS – £14K +

Business Systems Executive

to £20k + car — **West Country**

Our client has an international reputation for the design and manufacture of specialist products in the field of electronic technology.

The company has experienced rapid development in the introduction of computerised systems within all aspects of the business. An executive is now required to be responsible for the computer activity and to maintain the impetus towards further improving the company's efficiency.

Applicants, in their thirties, should have a degree and a solid record of achievement within manufacturing industry; and be able to demonstrate a high level of technical ability especially with regard to the use of on-line systems and real time development.

The ability to communicate effectively, verbally and in writing, is essential for the post, as well as the leadership and social qualities necessary both to motivate a dedicated team and to influence colleagues.

Reflecting the key role of this position, the successful candidate will report to the Managing Director, and will have the potential and drive necessary for rapid promotion to senior management.

The remuneration package is appropriate to a major company and includes an executive car and a generous relocation scheme.

Please send a full cv to: Brian Postles

CADsearch, London House, 271-273 King Street, London W6 9LZ. Telephone: 01-741 8011.

CADsearch

EUROPEAN MPU MARKETING MANAGER

. . . the industry's foremost challenge

about £40,000

Without question this is the key appointment within the European microprocessor industry. That is the measure of the products' strategic importance.

Powerful features like; 32 bit architecture, high level language capability, large uniform addressing, combine to create a real world beater. All that remains is to appoint the individual who will realise the outstanding future growth.

The prime personal challenge is in the wide-ranging nature of the function. To construct and apply programmes to achieve: design-win objectives, third party software support, customer education, applications support, product promotion and future product definition across a European-wide field of operations. Only an exceptionally talented engineer could achieve these goals.

Currently in your 30's, you must be a graduate engineer with significant experience in high level languages/operating systems, preferably in a computer systems environment. Strongly technical you must also possess the vision, drive and pragmatism to succeed in a fiercely competitive market place.

If you feel ready to accept the industry's foremost challenge then call me, Martin Warner on 07535 56155 or write enclosing a current cv to:

Kramer Westfield Associates Ltd, 23 Victoria Street, Windsor, Berks., SL4 1HE.

Recruitment Consultants to the Semiconductor Industry.

Kramer Westfield

(8166)

DENTAL ESTIMATES BOARD, EASTBOURNE

COMPUTER MANAGER for ICL installation

(Salary range £12,274-£15,730)

Applications are invited for the post of Computer Manager at the DENTAL ESTIMATES BOARD. Applicants should have had experience at management level within a computing department, including experience in an ICL installation. Knowledge of other types of installation would be helpful.

Health Service Conditions of Service and Superannuation arrangements apply to this appointment. Further details and a form of application may be obtained from the Clerk to the Board, Dental Estimates Board, Eastbourne, East Sussex BN20 8AD. Closing date for receipt of completed applications, Wednesday, 9th November, 1983.

(6085)

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Hydraulics Research Wallingford

HEAD OF COMPUTING SERVICES

£11,000 to £15,000

Hydraulics Research, Wallingford, is a forward looking private sector company recently transferred from central Government, having a reputation extending over 35 years as a centre of excellence in civil engineering hydraulics. Our central computer facilities are based on an ICL 2972 and DAP; a distributed network of DEC PDP 11s serve the experimental facilities. Mini and micro-computers are also used for a number of other dedicated and general-purpose applications.

A vacancy has arisen for a Computing Services Manager who will report to the Head of Technical Services and will be responsible for providing a broad scientific computing service to research staff. As well as the supervision of operations and systems and programming staff, the manager will take a leading role in the development of new systems to meet internal needs and is also involved, in collaboration with research staff, in formulating proposals for outside clients.

Applicants should have a degree in Computing or an allied, relevant discipline and have at least five years' experience of managing staff and projects in a computing environment. These should include analysis, programming and support, preferably involving the use of ICL and DEC equipment in scientific applications.

In addition to the salary quoted, the company provides a non-contributory index-linked pension scheme (equivalent to 21% of salary), flexible working hours and a subsidised staff restaurant.

For an application form please contact Mrs C. Thomas, Hydraulics Research Limited, Wallingford, Oxon OX10 8BA. Telephone 0491 38381 ext. 270. (6208)

MICRO SOFTWARE SPECIALIST TECHNICAL DIRECTOR

Our client is a well established group, based in West London, specialising in International Software Marketing. Through their cooperation with multinational partners, they will provide a totally unique service in Micro Software marketing. *This company now seeks an individual to join a team that already includes some of the best talent in the micro software market.* If you feel ready to head up the technical division of this International Marketing Service, you will need to satisfy our client that you can:-

- Tell them more about micro software than they already know
- Assess a product's ability to perform perfectly
- Manage author's corrections within tight deadlines
- Work closely with Technical Authors and Training Specialists
- Build and manage a dynamic support team
- Create superlative standards not yet found in the industry

If you are prepared to travel extensively, working the hours demanded by this growing industry, your rewards will soon be determined by your own ability.

Write in confidence to Mike Swaine, at, Wynnwith Management Limited, 12 Palmerston Road, Southampton. SO1 1LL (Please quote WM009)

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WYNNWITH INTERNATIONAL

DEC Engineers & Salesmen

Join Electronic Brokers and INCREASE YOUR EARNINGS DRAMATICALLY

If you're that rare combination of DEC engineer and sales man, a highly paid position awaits you at Electronic Brokers — *leading suppliers of DEC hardware.* You will not be 'on the road', but working as an internal technical sales engineer. So if you have sound knowledge of DEC hardware and have gone as far as you can in your present position, switch to an exciting future with Electronic Brokers — the sky's the limit!

Electronic Brokers

Contact: The Managing Director, Electronic Brokers Ltd., 61/65 Kings Cross Road, London WC1X 9LN. Tel: 01-278 3461

Telecommunications · Defence · Aerospace · High Technology

YES or NO to £16,000

1. Do you work for or wish to work in the above industries?
2. Do you have experience in Scientific Languages or Microprocessor Systems?
3. Are you educated to degree level or equivalent?
4. Do you wish to consider the widest possible choice of job options?

If the answer is YES, then you MUST contact STS Ltd for a free Fact file or rush your c.v. to John Spencer.

(8204)

STS Skyquip Technical Services Ltd.

SENIOR APPOINTMENTS – £14K +

COMPUTER SALES PROFESSIONALS...

Ensure your prosperity in 1984 – expand with

Microdata Information Systems Limited

in Newcastle, Wakefield, Manchester, Birmingham, North East Home Counties, Bristol, London, Dublin, and Government Sales Branches

Account Managers

Basic Salary £10,500-£14,000

Guarantee To £20,000+

Target Earnings £27,000, a number earn well over £35,000

Quality Company Car

Continued development, substantial backing and a progressive management style make our client Microdata Information Systems an exciting prospect.

Controlled growth has been at the rate of over 30% per annum for the last 3 years. 1984 will see considerable further expansion due to the enormous success of their powerful range of 16 and 32 bit computers, super-minis and DDP products.

To consolidate on this success, a number of additional highly skilled Computer Sales Professionals are required to further expand their sales team to enter 1984.

If you have a minimum of 3 successful years selling either Mainframes or Minis in any of the following specific key areas, they will want to talk to YOU:

★ Accounting/Financial ★ Manufacturing/Production ★ Local Government
★ "Blue Chip" Companies ★ International Corporations

Well Educated and Successful in Computer Sales? Aged 25-40? Ambitious?
ACT NOW! For a serious and totally confidential discussion, telephone **061-236 1157** during business hours.
Or evenings and weekends until 9 p.m. telephone
JEFF WALTON: 061-962 0002 ROY TORRES: Halifax (0422) 823153

INTERFACE
RECRUITMENT & SELECTION CONSULTANTS LTD

Manchester House, 86 Princess Street, Manchester M1 6NG. Tel: 061-236 1157.

WANTED Sales Executives

In Data Communications Systems & Network Management Systems

We have several Clients requiring professional Sales Executives with enthusiasm and first class track records

REWARD £20,000 +

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Marketing & Personnel Consultants Ltd.

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Contact **JAMES CLEMENCE** now!
for an immediate professional discussion.
061 236 7026 (Office) **061-980 5222** (Evenings and Weekends)

SYSTEMS CONSULTANT CITY c £14,500

One of the city's leading firms of stockbrokers, our client, acts mainly for institutional and professional investors. They now wish to appoint an experienced Systems Analyst to guide them through a major investment programme.

Your prime responsibility will be to liaise with the senior partners and group leaders to ensure that external suppliers provide adequate support during implementation. Subsequently, you will have to identify requirements within the Management information area and specify a total DP solution.

The hardware ranges from PDP 11/70's under RSX11M using Cobol, to micros running under MP/M; CP/M and UNIX. Applicants should have worked in a multi-user environment using both minis and micros and be extremely user orientated, a professional shirt-sleeve approach is essential.

Ring David Mason Johns at KPG now or 01-747 0969 (evenings and weekends). Please quote Reference 8232/CW.

KPG
01-948 5922

KPG Computer Support Services Limited Cobden House, Park Lane, Richmond, Surrey, TW9 2RA

SENIOR APPTS-£14K

CUSTOMER SUPPORT MANAGER
SUPPORT CONSULTANTS

Insight Database Systems Ltd (I.D.S.) is a successful and expanding multi-national systems house, specialising in software capable of dealing with today's financial and business problems.

Their most successful "INSIGHT," which has two main features, the first "Financial Modelling and Reporting System" and the second Insight's "General Ledger System," has proved such a success with leading companies throughout Europe, that they are now expanding their London operations.

Due to this expansion program, I.D.S. Ltd. now have positions vacant for a Customer Support Manager and a Support Consultant.

– Customer Support Manager –

The successful applicant for this position should be aged between 26 and 29 years, and be a qualified accountant with experience in some of the following areas: Systems analysis, product support, pre and post sales and operating experience on IBM system 34/38s. The successful applicant must also be highly motivated and capable of running a well-organised team of Support Consultants, as well as being able to deal with senior management and software user's at all levels. Salary and benefits commensurate with experience, but is not a limiting factor.

– Support Consultant –

Applicants for this position should ideally be aged between 21 and 26 and should be a part-qualified accountant. The applicant ideally must have a background in the support of accounting and business software and have some knowledge of IBM system 34/38 hardware plus a desire to grow within an expanding organisation. Salary and benefits commensurate with experience, but again, this is not a limiting factor.

For further details telephone Steven Knowles-Baker on 01-370 2021/3, or alternatively send a c.v. to him at N.K.B. Associates Ltd., 159 Gloucester Road, London SW7 4TH. All enquiries will be treated with the strictest confidence.

The Computer Specialists... Placing Computer Specialists

nkb Associates Limited.

N.K.B. Associates Limited
159A Gloucester Road
London SW7 4TH
Telephone: 01-370 2012/3

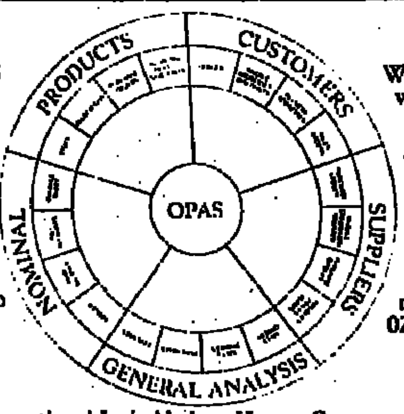
(6184)

Software Sales Consultants for the ultimate commercial business system
Earnings Circa £20,000 + Car
Manchester, Birmingham, Ilford

The system is called OPAS and it's DSI's exciting new interactive software for ICL ME29 and 2900 series users.

OPAS is a modular, fully interactive suite of programs covering Order Processing, Stock Control, Invoicing, Sales, Purchase and Nominal Ledgers and General Analysis.

DSI Software sells OPAS to ICL users.



We need professional sales people with a thorough computing and business systems background.

A determination to succeed through an organised business approach to selling is essential.

If you genuinely believe you are the right person then preferably telephone me before next Tuesday, November 1st, on 021-742 3241, or write:

Alan White, Data Sciences International Ltd, Abelson House, Coventry Road, Sheldon, Birmingham B26 3PS.

DSI Software ● DSI Microcomputers ● DSI Retail ● DSI Data Centres (6174)

SALES ENGINEERS
Software Services
On-target package c. £20,000+car

Syntek is a technical systems house undertaking a wide range of projects. We wish to recruit a mature sales engineer with a track record in selling software services.

Applicants should have a commitment to customer service, a strong technical background, and experience of at least two of these market sectors: communications, automation, banking, oil and defence. Responsibilities will include development of new and existing national accounts, preparation of proposals, and contract negotiation. This post offers the opportunity to participate in the growth of an expanding and successful systems house. Please send full c.v. to: Angela Smith,

Syntek Ltd., Suite 14, 98 St. Martins Lane, London WC2N 4AX. Telephone: 01-836 7466.

Syntek

SENIOR SOFTWARE ADVISOR

CENTRAL LONDON £12,000 – £16,000

MICRO SOFTWARE – MAJOR INTERNATIONAL COMPANY – GROUND FLOOR OPPORTUNITY

This career opening is with a world leader in electronics. Our clients design and manufacture a range of high quality micros and personal computers which have been outstandingly successful overseas.

Backed by strong financial resources and technical expertise, solid growth can be forecast for the recently-established UK company. In the USA, the corresponding division has expanded by a staggering 275% per annum for three years.

We have been asked to recruit a micro software specialist to provide technical support to UK dealers. This first-class career opening requires:

- sound knowledge of CP/M 86 and MS DOS (UNIX experience would be valuable but is not essential)
- familiarity with business systems, ideally including financial planning, database and communications software
- the personality and maturity to develop good relationships with dealers
- the ability to manage a small team in later stages, following organisational growth.

The employment package is first-class, and for an exceptional candidate earnings could be higher than the figure indicated above. Career prospects are excellent.

Please ring us NOW for a confidential talk, quoting ref. 229, or leave a message on our answering machine after hours.

(6211)

EDP SYSTEMS 01-637 5796
52-53 Margaret St. London W1N 7FF

SYSTEMS MANAGER
WEST MIDLANDS

Our client a member of a major group wishes to appoint a systems professional who wishes to play a major role as a member of a progressive Management team.

Encompassing as it does full responsibility for systems development in the company the appointment offers a wide ranging brief. This includes an ambitious project involving the upgrading of existing equipment, the implementation of Financial and Production packages and a considerable amount of customised software.

You will also control multiple and concurrent equipment and software developments and have a considerable involvement in custom-written systems.

The equipment is based upon the DEC PDP11 range with software written in RPL and Basic Plus operating under RSX-11M (to be converted to RSTS/E).

The benefits are those associated with a major employer and the appointment will be of interest to men or women currently earning around £11,000 p.a.

Please write with full c.v. including current salary, listing the names of any organisations to whom your application should not be sent, to:

Mr. M. J. Ridley, Managing Director (6180)

RSJ Advertising & Communications
Compton House 124 Compton Road Wolverhampton WV3 9QD

LOCAL AREA NETWORKS

SOFTWARE APPLICATIONS ENGINEER to £11,000 p.a.

CAMBRIDGE (relocation expenses available)

HARDWARE DESIGN ENGINEER to £10,000 p.a.

Young company undergoing dynamic growth seeks two professional engineers to join their small enthusiastic team of c.25 personnel. The client prides itself on giving the capable engineer wide discretion for complete project management with real responsibility.

The design engineer must already be familiar with Data I/O, particularly, local area networks and possess substantial TTL logic expertise. Responsibilities also cover Technical support. Client liaison pre and post sales, commissioning and 3rd line fault diagnosis.

The Network applications engineer will be capable of interfacing a wide range of software using B.C.P.L. and 'C', Fortran, Assembler and of designing systems to customers bespoke requirements. Previous communications experience is highly desirable.

Both posts offer good career prospects with the advantage of flexible working hours, contributory pension and free life assurance cover.

To find out more about this well established company with a substantial order book and outstanding reputation for technical excellence, Telephone

PAUL MEADOWS on Bishop's Stortford (0279) 506464

(6204)

ATA Engineering
Portland House, 29 Basbow Lane, Bishop's Stortford, Herts.

ata

Software Engineers. Are your skills good enough to take to the air?

Smiths Industries, a world leader producing avionic systems and equipment, seek to recruit Software Engineers at all levels to meet their order book demands.

The Project

The Smiths Industries Flight Management System effects optimum flight patterns, conserves fuel and time, determines aircraft position and provides the pilot with a full information nerve centre. Generally accepted as the most advanced in the world, it has been specified for several civil and military applications.

The Hardware

Based on interlinked Intel 8086 series microprocessors, supported by state of the art memory technology, the system provides for the optimum management of the flight from take-off to final approach. Development is being carried out on PDP11 and VAX hardware using CORAL 66 and ASSEMBLER.

The Location

The Company is based near Cheltenham – attractive and accessible. A spa town and lively centre of music, art and sport lying at the foot of the Cotswold hills. Nearby are all the major West of England routes (M4, 5, 6 and 50) and railway connections are excellent.

SMITHS INDUSTRIES
AEROSPACE & DEFENCE SYSTEMS COMPANY

The Candidates

From Software Engineer to Team Leader and beyond, these systems demand dedication, flair and a high degree of competence as they are responsible for the safety of the aircraft they serve.

Candidates will have worked in a software/hardware environment experiencing development of real-time and/or microprocessor systems. Knowledge of CORAL 66, MCS 86 or PDP11/VAX operating systems is an advantage. Experience of avionics or similar tightly controlled real-time applications is desirable.

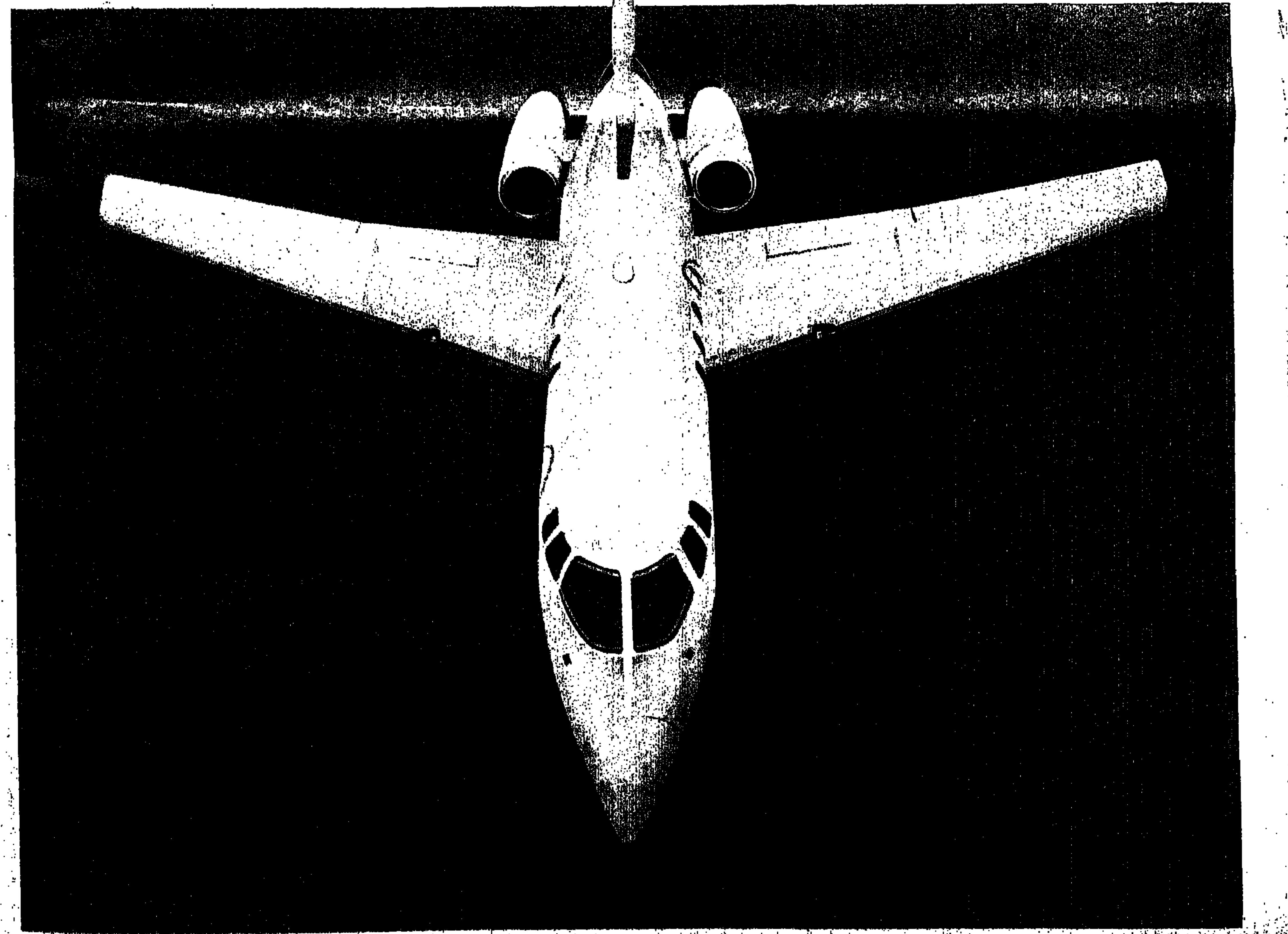
It is expected that successful candidates will offer degree-level qualifications and at least 2 years software engineering experience.

The Rewards

Working at all levels in the Project Software Organisation, successful candidates will be offered a salary in a range from **£9k** to well in excess of **£14k.** The company offers excellent career prospects and an exciting work environment together with a high level of fringe benefits.

So, if you are good enough to take to the air, ring **Phil Harkcom** on **021-643 6501** (office hours) or **021-308 4285** (evenings and weekends). Alternatively send him your c.v. addressed to: Computer People Midlands, Freepost, Alpha Tower, Birmingham B1 1BR.

Computer People Midlands



Qualified Technical Instructors

Required for Saudi Arabia TAX - FREE!

Maintenance of Electronic Computer Systems - Tabular Displays

Preference will be given to those candidates with knowledge of LOCUS, MYDAIS and P.T.I. MARKER GENERATORS.

Candidates should be under 50 with the following qualifications/experience:-

- Completion of an Instructional Techniques Course plus a minimum of 2 years classroom instructing.
- Or more than 3 years experience of classroom instructing.

These appointments have tax free salaries and overseas allowance. For further details write stating experience, age and qualifications.

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West Drayton, Middlesex UB7 0LL
Tel: 01-759 1392
(AGY: B146)

Fields

FIELD ENGINEERING

NORTH/MIDLANDS/AVON
£9.5K + CAR + PENSION + BUPA + OT

To work with 16 bit micro business machines plus Winchester drives, running UNIX, CPM, MPM and Oasis for fast-moving British manufacturer.

GREATER LONDON + HOME COUNTIES
£12K + CAR + PENSION + BUPA

Ambitious and motivated engineers are offered the opportunity to work with large mini-mainframes within a CAD/CAM environment. Knowledge of large minis/mainframes will be boosted by superb training in USA.

STOP PRESS: DEC Engineers – £16K package – Central London.

Call: Jackie
01-543 4844 days – 0403 58689 evenings/weekends
ALLTRONICS PEOPLE (AGY)

(6224)

Sound Attenuators Limited

COMPUTER MANAGER/ESS

A vacancy exists for a computer manager within a manufacturing environment. Suitable applicants could include experienced systems analyst/programmers looking for a more responsible position.

You will need a Cobol programming background and preferably have experience on NCR 1-Series equipment. We run on-line financial and manufacturing systems and there is lots of scope for development of current and new systems with the computer manager playing a key role.

Excellent conditions of employment with salary circa £10,000-£12,000 according to experience.

Contact Lynda Overton ext 234 at Sound Attenuators Ltd, Eastgates, Colchester CO1 2TW (0206 866911) or write for an application form.

(6113)

Pafec requires sales executives, support and development engineers. Due to rapid expansion Pafec Ltd requires more staff to sell and install their popular products.

SALES EXECUTIVES

Based at Nottingham or Bristol

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RPG II/III

IBM SYSTEM 34
CITY £13,000
An opportunity exists within a prestigious international bank for a capable and experienced Analyst/Programmer. The bank will shortly be installing the Midas package with other projects currently underway. So if you want to join a highly successful and motivated team of D.P. professionals then why not give me a call! IBM System 34/RPG II experience is essential. A full banking package is offered including a subsidised mortgage. **REF. GW/5340**

SURREY/ESSEX/LONDON/KENT/BERKS/MIDDLESEX/HERTS/BUCKS/BEDS
To £14,000
Never before have there been so many opportunities for people whose experience is gained largely or exclusively on OSD machines. Insurance companies, software houses, household names, banks and many others offering technically interesting, challenging and stable career openings to those experienced on IBM System 34/36/38 series with RPG II or RPG III. The salaries vary, but will be commensurate with your background. If you are looking for a new *opportunity telephone now to discuss your career* history and requirements, and let me tell you about the job that will suit you. **REF. GW/8760**

IBM SYSTEM 38/RPG III
HANTS £10-£13,000
A major multi-national electronics group based in Hants *requires a Senior Analyst/Programmer to* develop and maintain a D.P. package for manufacturing applications. The main requirements are for a self-motivated individual with a minimum of 12 months' IBM System 38/RPG III, to work with a small team of D.P. professionals and be well rewarded in terms of conditions and salary. **REF. GW/2859**

IBM SYSTEM 38
LONDON/MIDDLESEX BORDERS
To £13,500
Work locally for an expanding, established management finance company. Housing an IBM System 38 they require 18 months + RPG III experience with analytical capabilities. A mature outlook is essential along with the ability to fit in with a friendly team, and take responsibility for a large financial project. Superb offices and excellent financial rewards. **REF. GW/2475**

IBM OPPORTUNITIES

COBOL PROGRAMMERS
£9-£10,500
Have you two years' experience, preferably on IBM hardware? Would you like to work on development of a brand new package? To strengthen their team, my client requires a programmer with two years' DOS/VSE experience. Knowledge of CICS or other on-line systems an added advantage as is Easytrieve or ASSEMBLER. Normal range of fringe benefits associated with a large company and nice career prospects. **REF. EW/2857**

SYSTEM ANALYSTS PROGRAMMERS
BUCKS To £13,000
Outstanding opportunity for Systems Analysts or good Analyst/Programmers to utilise their technical skills. You should have four to five years' D.P. experience in a large commercial environment. The company run an IBM 4331, VM/CMS, VSAM & COBOL, so some knowledge of these skills is essential. The programming positions are at all levels, from 12 months + IBM COBOL. Package includes free BUPA, excellent leisure activities and relocation costs. **REF. EW/28303**

BANKING BENEFITS! IBM COBOL
To £11,500
London-based international bank with a firm commitment to on-line development, requires IBM COBOL programmers with at least six months' CICS experience, to assist in the support and development of banking projects. Great team atmosphere and full perks including subsidised mortgage after three months. **REF. CW/1399**

COBOL OR ASSEMBLER
CITY £9-£13,500
My client is a City-based financial services organisation running IBM 4341s under DOS/VSE with CICS. They are seeking a programmer and a senior analyst/programmer, with sound IBM experience, and a lively personality to fit into their energetic team supporting and developing a range of new financial facilities using CICS. For the programmer, 18 months + IBM ASSEMBLER or COBOL is required; preferably with some financial experience, and for the senior, around three to four years' experience, with the ability to progress to a management role in the future. **REF. CW/2761**

SYSTEMS PROGRAMMER
HERTS To £12,000 + mortgage
If you have four years' D.P. experience of which two have been in systems programming and would like a demanding and challenging position my client may be able to provide the opportunities you need. They require a new member to complement their team, *with knowledge of either VM, OS/VS1, CICS or* other on-line systems. The work will involve conversions to MVS, DL/I over the couple of years so familiarity with either will be a distinct advantage. The company offer generous mortgage assistance after an allocated time, sport and social club, free lunches and an excellent pension scheme. **REF. EW/2755.**

IBM ALL LEVELS
£8-£13,000
Three London-based software houses urgently need your IBM expertise. They are seeking all levels of people from 12 months' to five years' experience of IBM COBOL, but you must be able to offer some experience of either CICS work or databases, i.e. DL/I, TOTAL, IDMS, IMS, plus the personality and ability to liaise with clients and work to time schedules. Prospects are excellent and the variety of work covers all aspects of computing. **REF. C/GEN**

ANALYST PROGRAMMER
CICS TRAINING
£9-£11,000
My client has two openings for Analyst/Programmers with good PL/I or COBOL programming. If you have a proven track record with at least one project from feasibility through to implementation, and would like to work on new development projects and receive training in CICS this could be your next career move. Ideally candidates will have two years' experience in a DOS/VSE installation; a knowledge of VSAM or VM would be nice. The company offer non-contributory pension scheme and relocation assistance where appropriate. **REF. EW/2891**

IBM BERKSHIRE!
c£9,500
Programmer urgently required for this retail organisation, utilising IBM 4341s for production, and IBM 3031s for development, 18 months + IBM COBOL required together with some of the following: DOS/VSE, VM/CMS, VSAM, CICS, MANTIS or DL/I. Benefits include paid overtime, free BUPA and relocation. **REF. CW/2882**

OTHERS

BURROUGHS SENIOR
LONDON £11,500
This highly successful international company are inviting applications from programmers with several years' experience on Burroughs medium or large *mainframes. The essential requirements are good* COBOL with recent on-line and database exposure, a dedication to a high standard of professionalism, and the desire to join a company where your long-term career prospects are assured. In return they offer a luxurious working environment, sub rest, BUPA, bonus scheme, an excellent salary plus full relocation costs where necessary. **REF. MW/2929**

DEC/VAX – BASIC +
£10,500
My client, the Lupdon-based division of a major conglomerate organisation, is expanding and is seeking to recruit DEC/VAX expertise within a BASIC + environment. You will be working within medium sized teams developing commercial systems to a high standard. It is hoped that within six months the *successful applicant will be developing systems* from initial user contact through to implementation. Training will be given wherever necessary. **REF. AW/1010**

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This manufacturing company situated on the *Herts/Beds* borders is currently offering an excellent career step for those seeking to be at the forefront of new applications. The essential requirement is for someone experienced with ICL equipment preferably with exposure to VME and IDMS/TPS. This is an interesting and challenging position, with good salary and career prospects. **REF. DW/2910**

DATA GENERAL
£14,000
Due to continued expansion this London-based software house is looking to recruit a top class programmer with 18 months + Data General Business Basic experience. A first class career move as the work is 99% development, involving numerous applications and offers the opportunity to gain experience on several different machines. If you fit these requirements and would like to secure a responsible role with a go-ahead company please contact us for further details. **REF. MW/2743**

HEWLETT PACKARD – COBOL
£10,500
A minimum of six months' HP3000/COBOL is sought by this international company based on the Herts/Beds borders. Training is being offered in analysis, but it is hoped that you will be familiar with IMAGE, VIEW and/or QUERY. Development of a major new system is underway and there are many more planned for the future. If you would like to become part of this small but efficient team call me now for more details. **REF. AW/2369**

ICL ME29
CITY To £12,500
This is an excellent opportunity for a D.P. professional to take up a key position within this well-established insurance company. The company house 2 x ICL ME29 running under 1ME. Applicants should have a minimum of 18 months' ICL COBOL experience, with extensive exposure to TPS. You will play an integral part in user training and design and implementation of a range of insurance and business systems. This is an interesting position offering career prospects, in-house education, exciting development projects, and a pleasant and flexible working environment. Excellent package including subsidised lunches and four weeks' holiday. **REF. DW/2452**

UNIVAC PROGRAMMER
£11,000 + subs mort
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HEWLETT PACKARD – COBOL
To £12,000
As an Analyst/Programmer within this City based distributive concern you will be developing new financial and commercial systems from initial user contact stage through to implementation. The successful applicant must have a minimum of two years' D.P. experience and have an in-depth knowledge of HP 3000, COBOL, IMAGE, VIEW and QUERY. Promotion prospects are excellent and it is anticipated that he/she will be able to act as relief D.P.M. when necessary. **REF. AW/2792**

HONEYWELL COBOL
LONDON To £11,000 + subs mort
My client is among the most successful in its field and due to expansion is looking to recruit additional members of staff. The essential requirements are for 18 months + COBOL and/or SCREENWRITE experience. This is a superb opportunity to utilise your skills within a DPS 6 installation and to move into an extremely interesting position which will involve lots of development work. They are offering a competitive salary supported by a substantial range of fringe benefits associated with a major company. If you are interested in an exciting and challenging career and are seeking opportunity and responsibility, call now for further details. **REF. DW/2568**

WANG ALL LEVELS
To £16,000 + Co. Car
My client is a very prestigious and profitable organisation based on the West London/Herts borders. Due to company expansion they now have requirements for Wang programmers at all levels with good knowledge of COBOL or BASIC, and possibly ASSEMBLER. They also require a senior programmer/analyst with good communication skills, to eventually take charge of the applications side of the department, and *the development of new* systems. European travel is also envisaged. Although WANG experience is not essential for this post the ideal candidate will already have proved himself in a progressive commercial environment and will now be looking to take a step up the ladder. **REF. MW/2915**

HEWLETT PACKARD – SENIORS
To £15,000 + Relocation
I currently have two clients, one based in London and one in Berks, seeking Project Leaders. Both positions entail leading close-knit teams who work to extremely high standards, both in commercial and financial environments. For both you must display a *thorough knowledge of HP 3000*, and hopefully have a COBOL background and supervisory experience. There are excellent prospects for progression into management positions in the near future. Both companies given an excellent package which may include BUPA, £250 per year L.V.s, and relocation assistance. **REF. AW/2267/8**

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SURREY £9,500 + Mort
This Surrey-based insurance concern currently in the process of developing new systems are offering interesting and challenging work to programmers and analyst/programmers who can offer 18 months + ICL COBOL. *Experience of VME* would be desirable and will be rewarded accordingly. Full training is offered in database techniques, TP systems and aspects of systems design. This is an excellent opportunity to gain varied and practical experience whilst pursuing a worthwhile career. Company benefits include four weeks' holiday, subsidised restaurant and pension scheme. **DW/1739**

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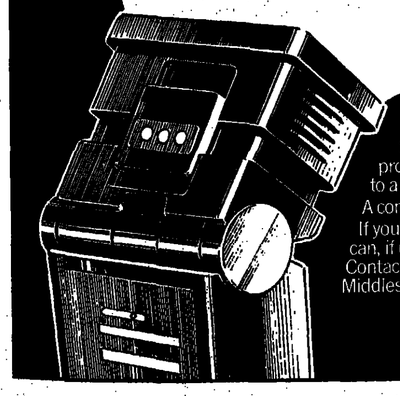

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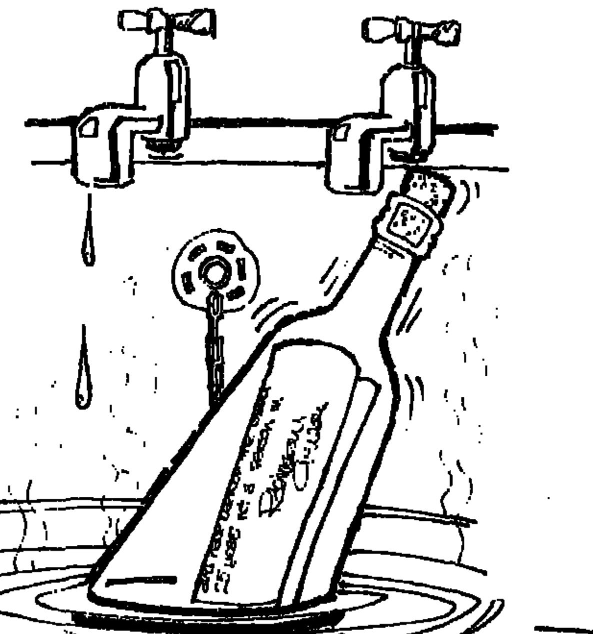

FREELANCE OPPORTUNITIES

SOUTHERN 0252 516141

	Ref:
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Business Analysts (Financial)	PH 197
CORAL 66, all levels	SC/SB 150
DATAGENERAL Business Basic	SB 180
DATAGENERAL RDOS Assembler	CW 196
DATAPOINT Datashare Databus Prog/Analyst	SC 104
EPS Consultants	CW 182
GEC Babbage and Viewdata Progs.	SC 166
Hardware/Software Engineers	SC 109
Honeywell GCOS, IDS, TDS, COBOL	DB 110
Honeywell L6 GCOS. TPS Tech Support or Systems Progs. URGENT!	DB 162
Honeywell L6 GCOS, Screenwriter or COBOL Progs.	DB/SB 192
HP 3000 COBOL with RAPID Progs.	PH 172
HP 3000 Analyst	KC 181
IBM Assembler Progs.	KC/SC 186
IBM Adabas, Natural Progs.	DL 156
IBM 8100 DPCX or DPPX Progs. and Sys. Progs.	SB 115
IBM IMS DB/DC Database Designer	PH 198
IBM PL1 with JSP	DP 116
IBM PL1, Adabas	DL 118
IBM IMS DB/DC COBOL & JSP Progs.	PH 168
IBM COBOL IMS DB/DC	DB/DL 120
IBM Series 1 RPS Assembler	PH 191
IBM DOS/VSE CICS Systems Progs.	SC 187
IBM JES 3 Systems Prog.	DB 193
IBM COBOL CICS DL1 Progs.	SC/DL/PH 121
IBM OS MVS COBOL + ICL GIII COBOL for conversion	CW 190

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8086 Assembler with GRAPHICS-VM an advantage SB 201

IBM System 38 PRG III Prog. with MAAPICS	SB 183
IBM System 38 RPG III	SC 127
IBM MANTIS Progs.	PH 159
ICL IDMS Analyst with Inventory Control	PH 163
ICL IDMS Database Analyst	CW 164
ICL IDMS Systems Prog./Designer	CW 130
ICL Systems 25 Designer and Progs.	CW 133
ICL VMEB IDMS, COBOL, all levels some with TPMS	PH/CW 134
ICL VMEB COBOL with SCL	PH 136
ICL ME 29 TME COBOL Progs.	SC 188
INTEL 8086 Programmers with PLM	DL 137
MASCOT Real-time Designers	PH 199
MICRO BASIC Prog.	CW 195
PDP RSX or RSTS/E Systems Prog.	CW 171
PDP RTII and DIBOL Progs.	SC 139
PDP 11/24 RT11, MACRO 11 with exposure to FILETAB and TELEMETRY Systems	SB 200
SAS Consultant	CW 179
TANDEM Analyst/Progs.	PH 184
UNIVAC 1100 COBOL	SC 154
VAX VMS Systems Prog.	CW 170
WANG PRG II Prog.	CW 189

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IBM

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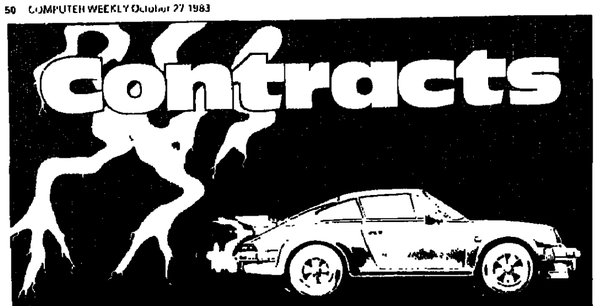
Contracts



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IDMS with Ads Programmers
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IBM/MVS	IMS/CICS/DL/1	**to £15K** Middx
SYSTEMS 34/36/38/RPG2	Insurance/Commercial	**to £12K** London/Home Counties
IBM 4341 VM/SP or CICS/VS	Systems exp.	**to £13K** West of London
BASIC	Mini/Micro Computers	**to £15K** London
IBM/UNIVAC/COBOL	On-line/Database	**to £12K** Surrey
IBM VS-FORTRAN/VSAM/ISPF	MVS/TSO	**to £11K** Sheffield

Analyst/Progs

DEC PDP 11 RSTS/E BASIC +	Multi-user Realtime comm. applications	**to £12K** Middx
IBM 34/38/4341		**to £15K** London/Home Counties/North
ICL 1500/ME29/2903	COBOL	**to £12½K** Essex/Herts
IMAGE PROCESSING C/UNIX	Scientific Applications	**to £12K**

Hardware/Support

APPLICATIONS ENGINEER	Peripherals Support/Microprocessor Systems	**to £15K** London plus International Travel
CUSTOMER SUPPORT	Basic	**£10K** Hampshire
SUPPORT ENGINEER	VAX 780/750	**to £17K** UK & Europe
APPLICATIONS ENGINEERS	Assembler/Micros/Printer Interface	**to £14K** LONDON
PROJECT ENGINEER	Systems/DEC	**to £11K** Beds/Manchester
SOFTWARE SUPPORT	Medical/Training/Technical	**£NEG** Berkshire

Systems Analysts

PERKIN ELMER	On-Line/Database Systems	**to £14K** Middlesex
CAD/CAM	Real time · Modelling	**to £16K** Man/Essex/South West
IBM/BURROUGHS	Commercial Accountancy	**to £15K** London/Surrey/Manchester
IBM/PL/1/DL/1	Database Support	**to £11K** Middx.
ICL/ME29	Commercial Design	**to £16K** Herts
IBM SYSTEM 34/38 MAAPICS		**to £13K** Sussex

Software Engineers

CORAL/PASCAL/MASCOT/C	Communications	**to £13K** Glos/H. Counties/Midlands/Blackburn
ASSEMBLER/PLM		**to £12K** Northern England
MILITARY SYSTEMS/RADAR	Coral · Mascot	**to £14K** Hants/Surrey/Essex/S. West
PDP/VAX/INTEL	Telecomms · ATE	**to £13K** Derby/Surrey/London/Kent
COMMS/TELECOMS/MOD	Mini/Mainframe	**to £14K** E. Anglia
HP3000/INTEL	CAD/CAM/ATE	**to £12K** Home Counties
HPA 900/RTE A1	Biotechnology Process Control	**to £13k** London/Wilts.

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SALES EXECUTIVES	Mainframe	**to £30K** Nationwide
CONSULTANT	Military/Defence	**to £15K** Berks
SYSTEM PROGRAMMING	Digital/RSTS/E, BASIC	**to £15K** Bucks
TEAM MANAGER	Computer Modelling/Fluid Flow	**to £17K** S. London
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MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611

KENT SITE SERVICES
In-house Supervisor and Engineers Bedfordshire to £11k

These are career opportunities for Engineers with two/three years' experience of minis and peripherals. With a reputation for technical excellence, Kent Site Services are seeking to enhance their in-house capability by recruiting a Supervisor and Technicians with component level expertise. The opportunity is offered to train on and be involved with a wide range of DEC equipment.

BBC Kent Site Services

Ref: CW10A

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A British manufacturer of high performance micro business systems is seeking customer engineers with two/three years' experience of micros and peripherals. Additionally, knowledge of CPM/MPM will be advantageous.
An ongoing commitment to R & D and several years' expertise in customising systems maintains and increases our client's position as a leading light in the industry.
Rapid expansion will continue in 1984 offering excellent benefits, training and career opportunities to successful candidates.

Ref: CW10B

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CUSTOMER ENGINEERS
East London/Essex £7.9 to 9k + O/T + S/BY + Car

Applications are invited from customer engineers with one-three years' experience of minis/mainframes to work on IBM systems.

The company, a major multi-national manufacturer, has maintained consistent, steady and contained expansion over many years resulting in a solid successful support organisation.

If you are a mature, professional individual wishing to work in sophisticated environments with technologically advanced products, ring us now.

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Our client is at the forefront of micro technology, both in the personal and business market-places. They now require:

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To evaluate and approve components, commission and evaluate reports and maintain part no. systems. Administrative and liaison ability, a micros background with understanding of components and previous commercial exposure will be desirable.

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To oversee the development and release of externally developed products and give specification approval to badge engineering products. An understanding of peripherals and associated components, previous micro and commercial experience is required.

Ref: CW10C

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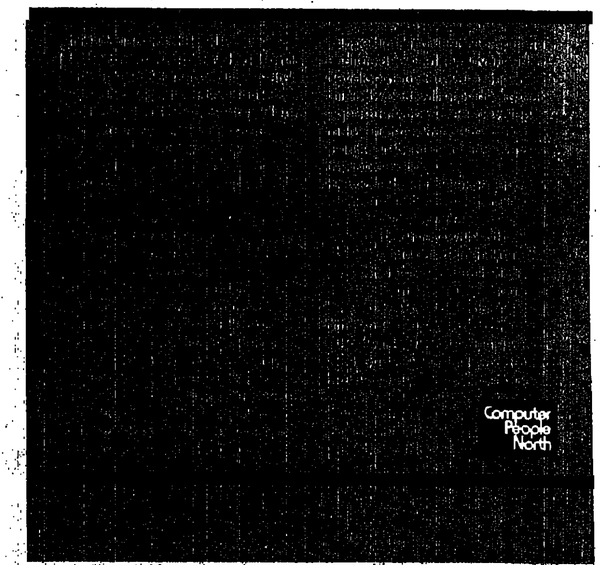

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London & Homes Counties · £10.5k-£13k package + 1.6L Cavalier

WANG's technical excellence across a large and varied product range of W.P. systems, 16 & 32 bit DP systems and network communications, has enabled them to achieve consistent and unparalleled growth in today's computer industry with sales in excess of $100 million in the UK alone.

We are looking for high calibre post sales Customer Engineers to join a company that has a large commitment to maintaining this phenomenal growth through ongoing development, of sophisticated hardware and software products. WANG's philosophy is to recognise the career aspirations and needs of the individual, to offer comprehensive training, an excellent benefits package and technologically advanced products.

If you possess two/three years' experience maintaining minis/micros, hard discs and other associated peripherals with customer skills to match, and wish to join the company of the future, ring Chris Bond or Kirk Blackmore on 01-637 9611.

(6165)

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LONDON
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£10K-£20K + EXPENSES + TRAVEL

Several of the larger, well-established consultancies are currently undergoing massive recruitment campaigns. Their requirements are as FLEXIBLE as your needs. If you have any of the following attributes – COBOL, PL/1, CICS, DL/1, VAX/PDP, ADABAS, IDMS, IMS DB/DC, EASYTRIEVE, VOLLIE, ROSCOE, RPG II or III, ADF, TSO/SPF, UFO, MK IV, SHADOW, ADS/O – you could soon be working in this fast and rapidly expanding environment. Obviously the more versatility you can offer our clients, the better the salary they can offer you. At a more senior level, salaries can be up to £20K plus expenses and European travel. These are ideal opportunities for programmers with around two years' experience wishing to expand their knowledge, as extensive TRAINING will be provided. If you're interested in getting out of that day-to-day end-user rut, contact SIMON KONING to discuss these exciting opportunities further.

DEC/PDP OPPORTUNITIES
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FUTURE D.P.M.
A major firm of ACCOUNTANTS who are developing a "from scratch" D.P. department require an experienced ANALYST PROGRAMMER to head their new development. Candidates should be able to demonstrate good system design experience and the skills to move to an even higher position as the department grows.

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MIDLANDS
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PROJECT LEADERS and ANALYST PROGRAMMERS are required by a Midland-based organisation. The project leaders are required to head development teams working on both manufacturing and financial systems and experience of building mini computer systems from conception to final implementation is desired. It is unlikely that anyone under the age of 24 would have the required experience.
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As one of the leading Recruitment Consultancies in the Midlands we are constantly looking for experienced Analysts and Programmers for a number of top systems houses and commercial concerns. If you have substantial programming experience in mini or mainframe systems, and would like to test the market, please contact Keavan Young or Mike Lenyon in our Birmingham office on 021-622 2045.

TCR

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(8195)

Software Development Systems Engineer
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Plessey Radar is among the leading companies in the use of advanced techniques for the development of large real-time systems. These techniques include a growing use of computers and automated graphics, particularly in the areas of multi-project configuration management, and computer-aided requirements, analysis and design. Present work is aimed at integrating and computer-aiding most phases of the development life-cycle.

We are looking for a Software Engineer with at least 3 years in-depth experience of system software, particularly with modern operating systems such as VAX/VMS or UNIX, to join a small team of experts working in the area of software tools and automation. The work is not academic and will support live projects.

We also have a number of opportunities for systems software experts in advanced microprocessor based applications at Chessington in Surrey and Cowes on the Isle of Wight.

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PLESSEY
electronic systems

(8147)

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Software engineer to be involved in the development of microprocessor controlled computer peripherals.

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- Graphics software
- Microprocessor hardware

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Mrs D. Dobson, Personnel Manager
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(8170)

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Our base product range includes IBM-PC, Sirius, Apple and Digital.
A clean driving licence is essential.
Send CV to John Boonham at Planning Consultancy Ltd, 46/47 Pall Mall, London SW1Y 5JG.

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Intelligent Software are designers of high-quality microcomputer software and products such as the Elan Enterprise Computer, the Milton Bradley Chess Robot, the Biztek Electronic Note Pad and the World Champion Chess Machine.

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The successful candidate must be able to work closely in a creative atmosphere with extremely talented engineers and programmers.

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Please write, enclosing cv, to:

INTELLIGENT SOFTWARE LTD. (REF OM)
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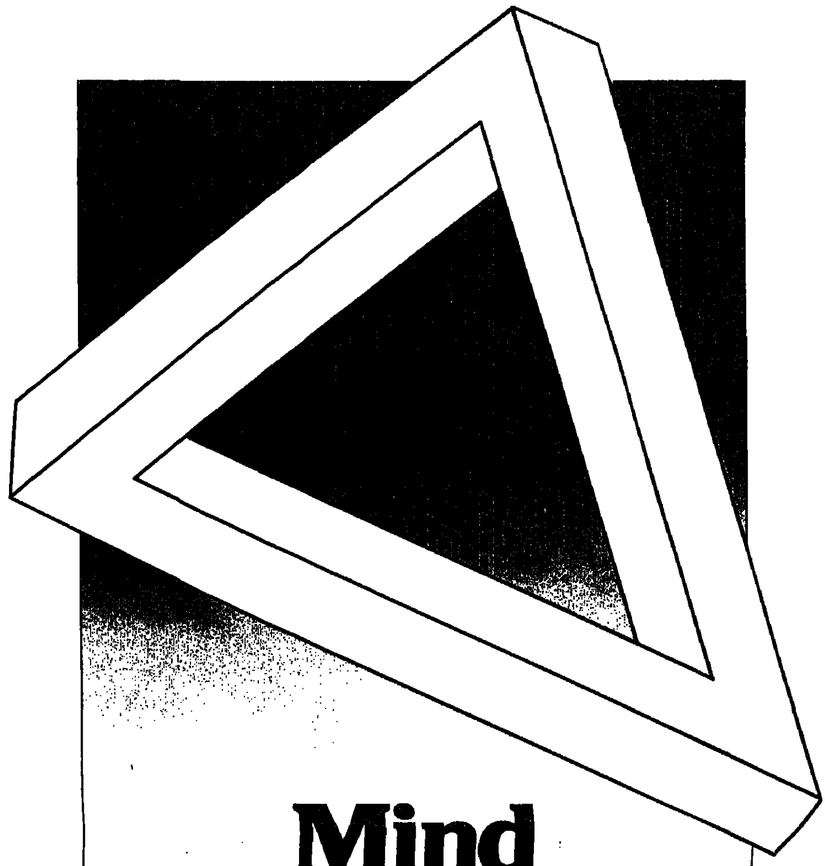
(8112)



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Our Client is a world leader in the production of sophisticated electronic systems and need the most up to date techniques and systems to maintain their lead.

The company is located in South East England and there are excellent local housing, shopping and leisure facilities and good communications to surrounding villages and the coast. Salaries of up to £10,000 pa and an excellent benefits package will be supported by relocation assistance as appropriate.

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ANALYST DEC/FINANCIAL — to £13,000

A well known City financial concern requires an Analyst to be involved in the development, implementation and marketing of their on-line real-time systems. They seek a young Analyst with around two years' financial applications exposure, accounting systems being of special interest to our client. This position affords the opportunity to be involved at an early stage of the development and make a heavy impact on this and future projects.

ALL LEVELS ICL COBOL — to £14,000

A growing Essex based company, heavily committed to major developments of financial systems on ICL 2900/VME systems, is seeking experienced ICL people at all levels. Progs. and Analyst/Progs. should have 18 months or more COBOL experience, the latter with some formal analysis. Analysts and above will have at least two years' systems exposure. These positions attract a generous company benefits package including an excellent profit share scheme.

ANALYST/PROGS DEC/BASIC — £NEG

Our client, an expanding software house based in Surrey has requirements for Analyst/Programmers for development and implementation of commercial systems in a VAX and PDP environment. They seek self motivated and enthusiastic people with at least two years' BASIC gained on DEC equipment. They offer a rewarding career with excellent opportunities for advancement within a client oriented situation.

ANALYST/PROGS HP COBOL/BASIC — to £10,500

Rapidly expanding software house based in C. London seek Analyst/Programmers to join their teams. A minimum of 12 months COBOL or BASIC gained in an HP 3000 or HP 250 environment is required. This is a good opportunity to work on a variety of projects and offers successful candidates very good career prospects and perks which include a company car in the future.

ANALYSTS C. LONDON — to £13,500

We have been retained by two well known London based companies to recruit Analysts with varying levels of experience. A sound DP background is required with preference given to candidates with general accounting applications exposure or IBM systems experience. Both positions involve extensive working on new projects and offer good career prospects. Perks include large company benefits and discount on company products.

PROGRAMMERS COBOL/FINANCE — c £10,000

Two C. London based financial concerns require ambitious Programmers to join their teams. Applicants should have a minimum of 18 months COBOL gained in a commercial environment and should have the potential to move rapidly into a junior management position. Excellent perks include full banking benefits, annual bonus and some overseas travel.

ANALYST/PROG RPGII — £11,500

An Analyst/Prog. with at least two years' RPGII (in a SYS 34 environment) is required for a manufacturing site based in Berks. User skills are of the utmost importance since a great deal of time will be spent with first time users off site. Although based in Berks. the successful candidate must be prepared for some UK and overseas travel. Standard large company benefits apply to include an excellent relocation package.

PROGRAMMERS HONEYWELL L6 — to £11,500

We currently have requirements for Programmers at two C. London Honeywell installations. Candidates should have 18 months'+COBOL or SCREENWRITE gained on Honeywell hardware. Both clients are currently expanding their DP teams to work on a variety of new developments. Excellent career prospects are offered together with a wide range of benefits which include travel allowance, sports and social club and a subsidised mortgage after qualifying period.

PROGRAMMER RPGII — £7,000

London based site require a Programmer with one year's commercial RPGII. The hardware is WANG but any hardware will be considered. Applicants should have standard accounting knowledge i.e. General Ledger, Purchase Ledger etc. and any manufacturing systems exposure would be of special interest. This site will offer the successful candidate rapid progression into analysis.

(6178)

404 4821

Apex Computer Recruitment Ltd.

London Office: 59 Grays Inn Road, London WC1X 8TL. Tel: 01-404 4821.
Brussels Office: Rue Gatti de Gamond, 24. Uccle 1180 Brussels. Tel: 010 322 377 4193.

Racal Research Limited, part of the highly successful Racal Electronics Group, plays a key role in maintaining Racal's commercial and technical superiority as the group's centre for advanced research and development. Due to continued expansion, we now wish to recruit a

Computer Systems Scientist

This is a new post and offers an excellent opportunity for a real career development in a challenging and expanding area.

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Candidates should be educated to at least degree level or equivalent, in an appropriate subject and have acquired a few years relevant experience. A basic understanding of electronics will be an advantage.

We offer the usual benefits to be expected from a major company, including a competitive starting salary, over five weeks annual holiday and first class pension and life assurance scheme.

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The level at which you'll be appointed depends on your skill and experience. You'll need a degree or equivalent in Computer Science or a related discipline, and a minimum of two years' real-time programming experience using an appropriate high level language in an industrial, commercial or defence environment.

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The Scottish company requires Analyst/ Programmers with experience of DEC or Data General computer systems for the Glasgow and Aberdeen offices for both permanent and contract positions.

For an application form contact Irene Heron at:

FRASER WILLIAMS (SCOTLAND) LTD.
Stock Exchange House
69 St. George's Place
Glasgow G2 1QY
Telephone No.: 041-226 3864

(6245)

SOFTWARE ENGINEER

The company is a multi-national specialist in oil and gas exploration with a technical and administrative support group located in Great Yarmouth.

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This new position will be a challenging one requiring the holder to become familiar with company and customer needs in a technically competitive market.

Some foreign travel may be anticipated.

This post offers a competitive salary and B.U.P.A. membership.

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SPERRY-SUN INTERNATIONAL INC.
14 ALPHA ROAD
GREAT YARMOUTH
NORFOLK NR31 0LQ

(6344)

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Department of Computer Science

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GRADUATE RESEARCH ASSISTANT

to work on a project funded by British Telecom to investigate the use of Expert Systems in a Software Engineering context.
The project is initially funded for one year to commence as soon as possible, but may be extended to British Telecom's option. The appointee will be encouraged to register for a higher degree.
Applicants should be good honours graduates in Computer Science or a related discipline, and a knowledge of Artificial Intelligence or IKBS would be particularly useful.
Salary: £5,649-£6,963 per annum.
Application forms and further particulars from: Personnel Section, Teesside Polytechnic, Borough Road, Middlesbrough, Cleveland TS1 3BA, Telephone: Middlesbrough (0642) 218121, Extension 4114.
Informal enquiries to: Mr W. J. Black, Extension 4262 or 4353.
Closing date for applications: 4 November 1983

(6124)

Our client currently requires a chartered or degreed

SENIOR ENGINEER

with either HARDWARE OR SYSTEMS/SOFTWARE experience including on-line computing, data transmission hardware/software, CORAL 66 or equiv. real-time programme language, for development, specification, installation & commissioning of hardware systems and software for Urban traffic control scheme. Supervision of technical/programming staff.

ALSO

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c/o Computer Weekly
Quadrant House
The Quadrant
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Could your personal best match ours?

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Here, you will be providing a central level of support to our marketing people. A stimulating and varied role, you will be at the receiving end of hotline queries from dealers and large account co-ordinators, so you'll need to understand the marketing environment. Your work will also include both the development and delivery of courses specific to the Personal Computer's hardware and software and its communications.

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Software Acquisition Representatives

In this position, you'll be involved in all aspects of the acquisition process – from initial evaluation, detailed testing at the function and usability level, right through to the documentation, illustration and development of promotional material. You can also expect involvement in the development and delivery of educational modules and demonstrations for the products required.

The kind of person we need is likely to be a systems engineer with experience of personal computing, a software developer with experience of small business applications, or indeed a specialist working in a specific application area. You should have the ability to work well under pressure and to effectively control development projects involving IBM and third party partners.

Software Tester

You will be providing vital assistance to the Software Acquisition Representative. This will involve you in the function and usability testing of various future Personal Computer products. You can also expect to take part in both application programming and the preparation of demonstrations.

The ideal applicant will be a young and energetic systems engineer or programmer with a keen interest in personal computers.

The IBM Personal Computer, small in size, big in potential. Help us realise that potential and you can look forward to an excellent salary, free life assurance, a contributory pension scheme and BUPA membership.

These appointments will all be based in Hampshire, so, if you have graduated in the last six years and can match our personal best, please 'phone 01-995 1441, extension 4078, for an application form, or write to: Sally-Anne Judge, Recruitment Officer, IBM United Kingdom Limited, 389 Chiswick High Road, London W4 4AL. Please quote reference:

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IBM

(6181)

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£9K.– £10K

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Based on IBM System 34 and System 36 hardware the first phase of this development is currently underway using custom designed software to handle order processing, requirements planning, stock control and financial reporting. These systems will interface with existing systems run on an IBM 4341 at the international headquarters at Slough where the development team is based.

A Programmer with sound experience of RPG II is now required to join the development team and to play a significant role in the development and implementation of the system at the various sites.

As well as an attractive salary, other benefits include 25 days' holiday, productivity bonus scheme and discount on Group products as well as genuine career prospects within an expanding department.

Please write with brief career details or telephone for application form to: Confidential Reply Supervisor, Ref: AER 457, Austin Knight Advertising UK Limited, 66a High Street, Egham, Surrey TW20 9EY. Tel: Egham 37096.

Applications are forwarded to the client concerned, therefore companies in which you are not interested should be listed in a covering letter to the confidential Reply Supervisor.

(6205)

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IBM

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PL/1 (3 yrs. min.) + VM/CMS + TSO ± CICS/VS ± RMS	PROGRAMMER
PL/1 + OS ± CICS ± DL/1 ± ROSCOE ± MVS (2 yrs. min.)	PERM PROGRAMMER
COBOL + A/C RECEIVABLE	ANALYST
COBOL + CICS	PROGRAMMERS, ANALYST/ PROGRAMMERS
COBOL + OS/MVS + TSO/SPF ± IMS DB/DC	ANALYST/PROGRAMMERS
COBOL + IMS DB/DC + ADF	PROGRAMMER, ANALYST/ PROGRAMMERS
COBOL + IMS DB + OS/MVS + ADF + TSO/SPF +IMS/DC	ANALYST/PROGRAMMER
S/38 RPGIII (FINANCE)	PROGRAMMER, ANALYST/ PROGRAMMER
OS/MVS	JCL WRITER
DOS/VSE + CICS + TOTAL + SHADOW + ASSM	SYSTEMS PROGRAMMER
MANTIS	PROGRAMMER
OS/MVS + IMS DB/DC + ADF + COBOL	DB DESIGNER
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SERIES I + RPS + ASSEMBLER	SOFTWARE PROGRAMMER
RAMIS	PROGRAMMER

ICL

IDMS PREFERRED	ANALYST
2900 + VME + IDMS (X) + TPMS	ANALYST
VME/B + PPL (GEN. LEDGER)	ANALYST/PROGRAMMER
S3	PROGRAMMER
SYS 25	ANALYST
DRS + CIS-COBOL	PROGRAMMER
ICL-PC + PACKAGE EVALUATION	ANALYST/PROGRAMMER
CAFS	ANALYST
VME + IDMS ± COBOL ± TPMS/DRS	ANALYSTS, PROGRAMMERS
TPMS + COBOL	SENIOR PROGRAMMER
TP	ANALYST, PROGRAMMER/ ANALYST

OTHERS

PDP ± VAX, BASIC+, +2	PROGRAMMER
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INTEL 8080/85 + DEGREE + ASSEMBLER	PROGRAMMER
H DPS8 + COBOL + DM4 + IDS2 + TP	PROGRAMMER
U1100 + DMS + COBOL + EXEC	PROGRAMMERS
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CONTACTS

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Senior Programmer – Database Support Kent
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To support the major database development currently being undertaken, our client require an additional Senior Programmer to join their database support team.

The successful applicant will ideally have a Cobol programming background and be familiar with all aspects of DMS. A high degree of commitment to the team is expected, and there is also considerable scope for personnel achievement.

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URGENT MESSAGE TO ALL CONTRACTORS!!!

AJK's contract register is 10 years old this month. Many thanks to all of you who are registered with AJK. For those who are not, please send your C.V. or telephone:

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ICL 2900 IDMS VME TPMS COBOL PROGRAMMERS
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on 0442 40761
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Computer Search & Selection

PIPE DREAMS?

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A thriving software house has a requirement for a number of consultants with extensive real time military or civil systems background. Solid experience of VAX/PDP advanced software engineering techniques is essential.
JA331/1

SENIOR ANALYST PROGRAMMER
Surrey c12K
Major public manufacturing company has a vacancy for a Senior Analyst Programmer. Scientific, or engineering background coupled with minimum of three years Fortran is required. Macro 11/32 would be advantageous.
JA331/2

SOFTWARE ENGINEERS
Sussex c12K
Communications division of large manufacturing organisation has a requirement for several Software Engineers with the following experience:— PDP11, INTEL, ASSEMBLER, CORAL, FORTRAN and Communication Systems.
JA331/3

SOFTWARE CONSULTANTS
London 8.5-15K
City based systems house is seeking expertise in the following areas:— Real Time Defence, Database Design, Telecommunications and Industrial Process Control
JA 331/4

SYSTEMS CONSULTANTS
Gloucester 9-16K
Branch office of an established software house requires Systems Consultants with a real time process control background and solid experience of block structured high level languages.
JA331/5

SOFTWARE DEVELOPMENT ENGINEERS
Middlesex 9-13K
One of the UK's leading defence contractors have an on-going requirement for software engineers with a background in scientific, engineering or military systems. Experience on mini's and micro's using FORTRAN, CORAL or PASCAL in a real-time environment is essential.
JA331/6

PRINCIPAL CONSULTANTS
Hertfordshire c14K
A major software division of a large British company have a number of vacancies for their Field Support Group. Specific areas of interest are X25 communications, 8085/6, and BCPL. Sound UNIX and 'C' would be highly advantageous. Data communications knowledge and real-time microprocessor experience is essential.
JA331/7

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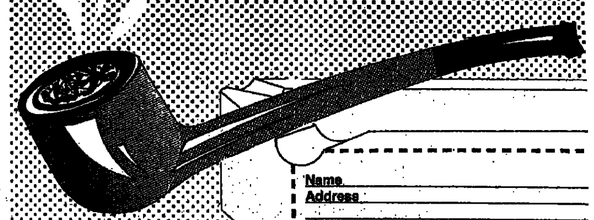

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European Support with a world-leader in Computer Graphics

As one of the world's leading manufacturers of computer graphics products and systems, CalComp already holds the number 1 position in a number of areas in what is one of the most dynamic and competitive sectors of today's computer industry.
The Company's advanced and expanding product range currently includes pen plotters, electrostatic plotter/printers, digitizers, interactive graphic displays and complete, minicomputer-based turnkey CAD systems, all of which combine to put us in a position where we are now set for a period of rapid and sustained expansion.
To help support this expansion the following positions have been created within our European Support and Marketing Group based at Wokingham. All positions involve frequent short duration European trips.

Support Programmer
Graphics Systems c. £11,500 + Benefits

This is an ideal opportunity for an experienced Fortran Application programmer with a good academic background who wishes to move into the area of Interactive Graphics Systems.
Our IGS-400 and IGS-500 range of systems comprises state-of-the-art hardware and software aimed at the Architectural, Engineering and Construction Industries. The recent growth of our customer base, along with the planned introduction of a series of new software products, has created a vacancy in our European Support Group.
The successful applicant will join the Systems Product Support Group responsible for providing front line support to our sales companies throughout Europe. The job entails the specification and writing of customer specials, enhancements to existing products and the technical launch and support of new software products.

Fortran Programmers
Graphics Peripherals c. £9,000 + Benefits

Internal promotion within our European Headquarters has created vacancies for application programmers within our Graphics Product Support Group. These posts are ideally suited to young graduate programmers with Fortran or equivalent experience, looking to move into a support environment.
The Company offer for sale one of the most comprehensive ranges of graphics peripherals and controllers in the industry. A constant challenge is to attach these peripherals and controllers to an ever increasing number of host computers and to support graphics and applications software within these hosts.
The successful candidates will help support our European Operating Companies in these activities on the complete range of our Graphics Products. No previous experience of graphics is required, but initiative and flexibility are essential.

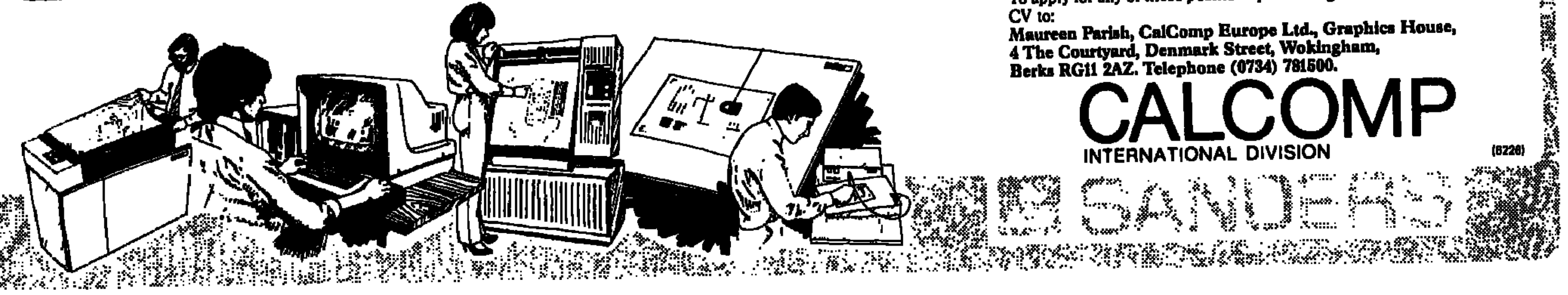
Support Engineers
Graphics Systems & Displays c. £12,000 + Benefits

Our European Operating Companies have a large force of Field Service Engineers who provide first line maintenance and service to our customers. We have a requirement within our European Support Group to provide in-depth technical back-up to these activities.
The most dynamic growth area in the Graphics industry is in Systems and Displays. CalComp is very active in both, with its IGS range of Interactive Graphics Systems and its Vistagraphic range of Displays. The current opportunities are for Senior Engineers to join our European Group staff to provide support to these products.
The successful candidates are likely to have considerable experience of both graphics displays and mini based systems. In addition to technical expertise, self motivation and good communications are essential.

European Marketing Assistant
Graphics Peripherals & Systems c. £11,500 + Benefits

Reporting to the Product Marketing Manager – Europe, the European Marketing Assistant will work on a wide range of market planning, promotion and monitoring projects.
This is primarily a communications job: ensuring that CalComp's many European Operating Companies are fully equipped with the latest reliable information and tools necessary for aggressive sales and promotion in a highly active and competitive market.
The successful applicant should have experience in multi-national marketing and promotion activities, particularly with regard to the monitoring/reporting of results.
CalComp also operates through Distributors and Dealers in many markets, and experience in working with or for such organisations would be of considerable value.

To apply for any of these positions please ring or write sending full CV to:
Maureen Parish, CalComp Europe Ltd., Graphics House, 4 The Courtyard, Denmark Street, Wokingham, Berks RG11 2AZ. Telephone (0734) 781500.



CALCOMP
INTERNATIONAL DIVISION
SANDERS
(6228)

Analyst/Programmer
c. £11,000

The British National Oil Corporation is responsible for marketing over half the total crude oil production from the UK sector of the North Sea, acquired through participation agreements and other arrangements with producers. The Computer Services Section is responsible for the implementation of computer-based systems and their operation.

Following the installation of an HP3000, the Corporation is seeking to recruit an Analyst/Programmer to join a small team involved in the development and enhancement of a wide range of systems, using not only conventional programming languages but also specialised software in such areas as financial modelling, data dictionary/reporting and data entry.

Applications are invited from graduates who have at least three years' experience of computer programming. Preference will be given to those with a knowledge of COBOL and/or the HP3000 series of computers.

A salary in the region of £11,000 will be offered to the successful candidate. In addition, the Corporation provides a wide range of benefits such as free BUPA membership, 5 weeks' holiday and a subsidised staff restaurant.

If you are looking for greater involvement in systems analysis and wider application experience, write for an application form, quoting reference (AP/EA/CW) to: The Personnel Manager, The British National Oil Corporation, 29 Bolton Street, London W1Y 8BN. Tel: 01-408 1840 ext 3231. Applications should be received by Friday 11th November 1983.

BNOC
The British National Oil Corporation

ANALYSTS & PROGRAMMER ANALYSTS
– YOU NEED US

RESET is a young and rapidly expanding company, providing a software consultancy service to the manufacturing, financial and engineering environments. As an independent office automation consultancy, we have the ability to review each client's situation and advise them on the best possible solution to their needs, be it utilising bespoke software or standard packages.

If you are a **Programmer/Analyst** or an **Analyst** looking for an opportunity to develop your skills within the analytical and management fields, then we'd like to hear from you.

Our specific requirements are for **three Project Leaders** and **four Analyst/Programmers.** We see these posts as being of interest to individuals ready for promotion, but unable to attain it with their present employer.
Successful candidates will have gained a minimum of 18 months' working experience, and Analyst/Programmers will be proficient in Cobol, preferably on Wang VS, or alternatively on DEC VAX, or IBM S34/38 hardware.
Salaries will be within the range £9,000 to £12,000 pa; 20 days' annual leave; reimbursement of expenses incurred on company business.

RESET

Informal interviews will be held at our offices on SATURDAY, NOVEMBER 5. Telephone Evelyn Harris NOW at RESET Office Automation Ltd on 01-328 3283 for further information

(6148)

Sales and Marketing
Guildford based

Realistic first year MINIMUM
c.£20,000+car

Our client is part of a group which may fairly be described as a 'household name'. It is a new software house that the group has set up to specialise in specific vertical markets. These markets are Property Management, Commodity Broking and Export Shipping and, within them, the company will be providing a wide range of solutions to business problems, which may take the form of consultancy services, bespoke software, applications packages (including general accounting) and hardware. Hardware will cover the whole range of **DEC** equipment, together with the ACT **SIRIUS** and **APRICOT** micro-computers.
If you are already successfully selling, in areas that are relevant to our client's aims, and are capable of growing with the company, please contact Joan Ainsworth on 01-681 8311. Computer Search & Selection, 6th Floor, Carolyn House, Dingwall Road, Croydon, Surrey CR0 6XF.

Computer Search & Selection
(6230)

SALES ENGINEERS
Software Services
On-target package c. £20,000+car

Syntek is a technical systems house undertaking a wide range of projects. We wish to recruit a mature sales engineer with a track record in selling software services.

Applicants should have a commitment to customer service, a strong technical background, and experience of at least two of these market sectors: communications, automation, banking, oil and defence. Responsibilities will include development of new and existing national accounts, preparation of proposals, and contract negotiation. This post offers the opportunity to participate in the growth of an expanding and successful systems house. Please send full c.v. to: Angela Smith,

Syntek Ltd., Suite 14, 98 St. Martins Lane, London WC2N 4AX. Telephone: 01-836 7466.

Syntek

University of Glasgow Department of Electronics and Electrical Engineering

Programmer for GEC 4070 Mini-Computer

A GEC 4070 multi-user mini-computer has been installed by the Science and Engineering Research Council within the Faculty of Engineering, University of Glasgow. This computer forms part of a national network, providing interactive computing facilities for engineering research. An applications Programmer/Adviser is required to assist members of various groups with the development of programs and to liaise with SERC staff at the Rutherford Appleton Laboratory, who are responsible for the system software mounted on the 4070 computer. Applicants should have an Honours degree in an appropriate subject – Engineering, Mathematics, Physics, Computing Science. Salary will be within Grade 1A of the Other-Related Staff Salary Scales £7,190-£11,615, with placement according to age, qualifications and experience. Further particulars may be obtained from Dr R. J. R. Leybourn, Department of Electronics and Electrical Engineering, The University, Glasgow G12 8QQ to whom applications (two copies) should be addressed giving the names and addresses of at least two Referees. Closing date: 14th November, 1983.
In reply please quote Ref. No. 5160P

(6179)

Telford Development Corporation

DEPARTMENT OF ENGINEERING SERVICES
COMPUTING ASSISTANT
Grade III/IV (£5,481-£6,612)

Applications for the post of Computing Assistant in the Operations Section of the Department are invited from persons with a suitable computing qualification and/or at least two years' experience in the application and/or the programming of computers.

The Department makes extensive use of computer-aided design techniques and the successful applicant will be expected to assist staff in the use of the computers as well as analysing problems in BASIC or FORTRAN.

Applications, giving details of qualifications and experience, should be forwarded to the Personnel and Management Services Officer, Telford Development Corporation, Priorslee Hall, Telford, Shropshire TF2 9NT by 7th November, 1983.

(6236)

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- ☐ **SYSTEMS ANALYSTS** with upwards of two years' analysis experience (the application background is not critical, as our clients will provide retraining where necessary), or
- ☐ **ANALYST/PROGRAMMERS** who wish to move to systems analysis work.

If you feel that a move to a major, up-market installation would help your career, please ring us in confidence for a talk, quoting ref. 191. If it is more convenient for you to ring outside office hours, your message will be recorded.

(6170)

EDP **EDP SYSTEMS** 01-637 5796
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CONTRACT

IBM

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SYSTEM 38 RPG3 PROGRAMMERS	– SUSSEX
DOS/VSE, PL/1 CICS ANALYST/PROGRAMMER	– SURREY
MVS PL/1 ANALYST/PROGRAMMER	– MIDDLESEX
DOS/VSE SYSTEMS PROGRAMMER	– SURREY
MVS SYSTEMS PROGRAMMER	– SURREY

ICL

2900 VME COBOL IDMS PROGRAMMERS	– LONDON/BERKS.
2900 IDMS, TPMS SYSTEM TRIALISTS	– MANCHESTER
2900 IDMS, TPMS PROGRAMMERS × 4	– BERKSHIRE
2900 IDMSX, TPMS ANALYST	– SURREY

HP3000

COBOL PROGRAMMERS AND ANALYST/PROGRAMMERS
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OTHERS

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Contact Lorraine, Lynne, Wendy or Tony on 01-948 5922 (weekdays)
or contact Lorraine on Walton-on-Thames 245552 (evenings and weekends)

(6183)

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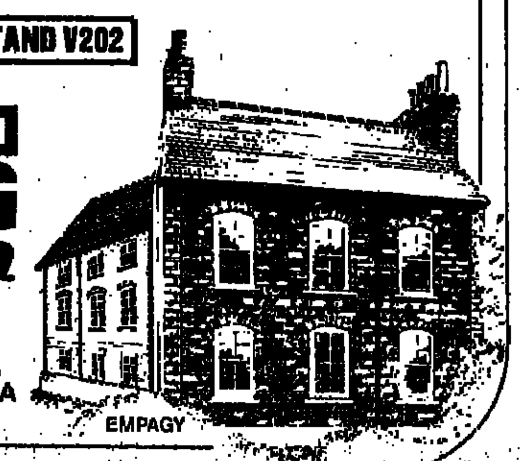

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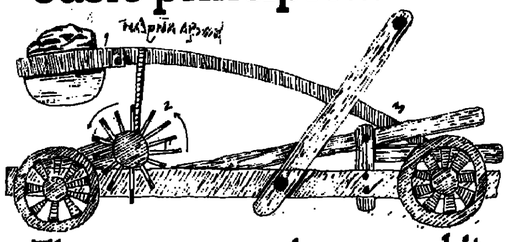
SOFTWARE ENGINEERS

occ London

In the beginning there was the basic principle...



Then someone improved it
Then someone improved it
Then someone improved it
Then someone improved it
Then someone improved it
Then...

can you improve this?

In the fast-moving world of intelligent guided weapon systems, our client's high-integrity built-in software has a definite edge on the competition. As a software house, they are setting their own ambitious targets, and are presently initiating a major research and development programme.

They have introduced the latest VAX systems and powerful real-time minicomputers. This dramatically enhanced capability signals important openings for experienced Software Engineers who can make a positive contribution at this early stage.

In all cases you should have a degree-level qualification in a science, engineering or computing field; preferred experience is in real time software development using the host-target concept, with CORAL/ MASCOT.

In addition to the following vacancies we are also seeking Consultants for R & D into advanced software engineering techniques for applications in middle to late 80's.

CONSULTANTS c£17,000

With at least 10 years' experience in developing significant real-time software and/or support environments, you will be expected to produce both conceptual and practical design solutions as well as directing a number of software engineering groups. Ref No: G756

PRINCIPAL SOFTWARE ENGINEERS c£14,000

Operating at conceptual design level, you'll need to be a natural leader with in-depth expertise in at least one software specialisation (real-time software design, support environments, simulation, etc.) built up over 8-9 years' professional involvement with both high and low level programming techniques and languages. Ref No: G755

SOFTWARE AND SENIOR SOFTWARE ENGINEERS c£9-13,000

Working to clearly-defined functional requirements with a mixed team of engineers, you will design, develop and prove real-time software at group or individual module level. At least 3 years' appropriate experience is required, using high level structured programming languages. Ref No: G754

Positions offer fully negotiable salaries and a first class relocation package will be available, where appropriate, to candidates for assistance in moving to this pleasant part of the Northern Home Counties.

For further details, interested applicants should write or telephone, quoting appropriate reference.

01-242 9356 occ computer personnel

24 hour answering service

Recruitment Consultants, 1st Floor, Craven House, 121 Kingsway, London WC2B 6PA.

NEW MIDDLESEX-BASED COMPUTER CENTRE
IBM 3083-MVS/JES2, TSO/SPF, CICS and IDMS

Our client is a major international organisation in the Financial Information Services sector of the market, and is currently setting up a new computerised European computer centre. Decisions have been taken to develop a wide range of financial services for UK and European customers, which involves the design and implementation of large DATABASE systems using IDMS and CICS as a TP monitor. Immediate requirements are to recruit the following key DP professionals:

POSITION	COBOL	ASSEMBLER	CICS	IBM O.C. (MVS PREF.)	DATABASE (IDMS PREF.)	SALARIES to £
Technical Project Manager	✓	useful	✓	MVS	IDMS	£17,000
Senior Business Analysts	✓	useful		any	any	£13,000
Senior Analyst Programmers	✓	useful	✓	any	any	£13,000
Analyst/Programmers	✓	useful	✓	any	any	£12,000

BUICK COMPUTER SERVICES Ref: C1052

RECRUITMENT DIVISION
72 Rochester Row
Victoria · London SW1P 1JU

Tel: 01-834 0061 (24-hours)
Or call evenings and weekends
01-942 1178

(6251)

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611

Printing altered the course of History
Miles 33 altered the course of Printing

Miles 33, based in Bracknell, is an expanding young public company who design, build, market and service sophisticated computer systems for the publishing, printing and typesetting industry. Because of total dedication to the very latest technology in mini/micro computerisation with local area networks, and detailed understanding of the market's requirements, demand for these systems has ensured continuing growth of 50-100 per cent pa. This continued expansion has created the urgent need for a:

U.K. Sales Manager

The ideal applicant will have a proven track record of successful computer sales with good technical strength in terms of systems/solutions. A university degree in maths or some numerate discipline is highly desirable. A senior systems analyst (from the same industry) with excellent communications skills, looking for a career move into selling, may be considered.
Specifically, the position will involve selling sophisticated mini and micro based 'front end' computer systems to drive phototypesetters for non-newspaper composition. Average system value is typically in excess of £100,000.

The title 'Manager' is appropriate, although at present no staff report to the U.K. Sales Manager. The right individual therefore has to have the ability to: find prospects, deliver formal presentations, prepare detailed analyses of prospect requirements incorporating systems solutions, persistent follow up and closing the order.
This is a critical appointment which will dramatically affect growth over the next few years. Only candidates of the highest calibre therefore should apply. Salary and benefits are excellent and consistent with a highly successful company and market leader.

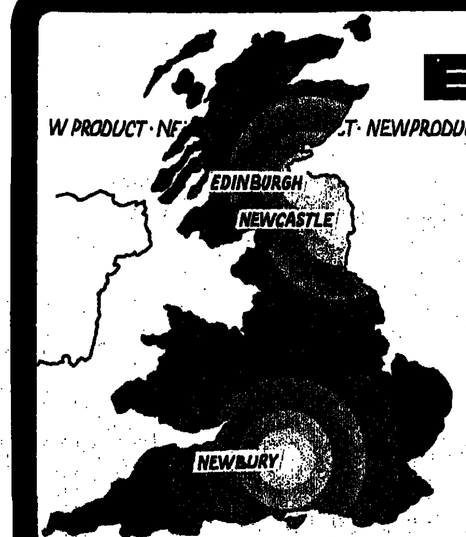
For a more detailed discussion, please contact Craig Millar on 01-637 9611. Alternatively, send your c.v. to Management & Executive Selection at the address below.

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION (6166)

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611



ENGINEERS

W PRODUCT · NEW PRODUCT · NEW PRODUCT · NEW PRODUCT · NEW PRODUCT · NEW PRODUCT · NEW PRODUCT · NEW PRODUCT · NEW PRODUCT · NI

U.K. Locations · to £11K + CAR

Our client is the world's leading manufacturer of electrostatic printers/plotters and output systems with an installed base covering over 50 countries.

Moving quickly into the CAD field and offering an exciting new colour plotter range, key individuals are required to maintain and promote the company's rapid growth.

SOFTWARE SUPPORT ENGINEERS £11K+

With two/three years' Fortran experience preferably obtained in a graphics environment. Successful applicants will demonstrate initiative and customer handling skills. Duties encompass installation and maintenance of software, resolving customer needs and involves a level of pre-sales support.

CUSTOMER SERVICE ENGINEERS £10K+

Will possess more than three years' systems exposure, DEC experience being of particular interest. Component level ability and an interest in software is desirable.

These are career opportunities offering scope, interest, comprehensive training and excellent benefits package.

- ★ Excellent salary
- ★ Bonus
- ★ 2 litre GL or equivalent
- ★ Free petrol
- ★ BUPA for family
- ★ 23 days hols rising to 28
- ★ Pension and life assurance
- ★ Comprehensive training

For further information ring Kirk Blackmore or Chris Bond on 01-637 9611

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION (6177)

DALROTH

A great opportunity to jump the queue!

New WANG VS100 Installation
Central London Salary £11,000-£14,000

Basic + Benefits

Join the London Headquarter operations of a Company offering on-line accounting, contract and management services to the TV, film and entertainments industry.

This opportunity offers the chance to work with the originator of the software whilst he is in the UK tailoring, enhancing and developing it further for the European and UK market, and at the same time training you for a management role.

This system is based on WANG VS100 hardware and developed in COBOL; WANG experience would be ideal, although any good mini COBOL experience, ideally financially based, would be considered.

For further information, please contact Jenny Dalrymple-Hay or Peter Henrick on 01-493 2947, from 8 a.m. to 10 p.m. Monday to Friday or weekends Jenny Dalrymple-Hay on Beaconsfield (04946) 4579 or Peter Henrick on 01-390 1640 quoting Ref: 5019.

DALROTH & PARTNERS LTD. 4 HALF MOON STREET, LONDON W1. 01-493 2947

(6233)

MCS

LONDON AND MANCHESTER

Management Control Systems is a successful AUTHORISED DIGITAL COMPUTER DISTRIBUTOR with a rapidly expanding £4 million a year turnover. We are based in Manchester and London with clients throughout the country.

We have vacancies for professional staff with several years' experience to work with PDP/RSTS and VAX/VMS on-line commercial systems. There is unique opportunity to become involved with a variety of interesting projects and clients. You will work mainly on MCS premises using our in-house computers and travel to our clients' sites for implementation and support.

There is a company car scheme, private patients plan, pension scheme, profit share and provision of free lunches.

SYSTEMS ANALYST/ PROJECT LEADERS — **Up to £13,000 plus company car**

To actively participate and assist in the design, selling and implementation of our computer-based distribution and manufacturing systems. Applicants must have proven ability in implementation of on-line distribution/manufacturing systems.

PROGRAMMER/ANALYSTS — **Up to £12,000**

Applicants must have at least three years' experience of on-line commercial systems using RSTS/E with BASIC PLUS or VMS with COBOL.

PROGRAMMERS — **Up to £10,000**

Applicants to have at least one year's programming experience in development of on-line commercial applications using COBOL, DIBOL, RSTS/E with BASIC PLUS.

Please send CVs or contact:

LONDON
Marilyn Collen
4th Floor, Bilton House
54/56 Uxbridge Road
Ealing, London W5 2TJ
Tel: 01-840 3292
(reverse charges)

MANCHESTER
Fiona McKinnel
3 Wynnstay Grove
Fallowfield
Manchester M14 6XG
Tel: 061-248 7100
(reverse charges)

(6988)

250 Million a Day!

. . . hard to believe, but we really do drink that many cups a day!

A reputation for excellence is hard to achieve and even harder to maintain. Lyons Tetley is a company which has built such a reputation. Today they are much more than just a household name in tea and coffee – they are one of the MAJOR FORCES IN BRITISH FOOD!

To reach this level they have evolved a comprehensive and efficient organisation incorporating the best marketing, production, financial and administrative practice available.

They intend to build on their achievements and hope that by joining them now, you will build on yours.

The Company has used IBM GSD equipment for some years and present hardware consists of a SYSTEM 38 MODEL 7.

It is an impressive operation and to keep pace with the demand for fast and efficient business systems, a second SYSTEM 38 (7) is planned for later this year. The D.P. Department is an exceptionally effective unit enjoying the total support of their very enlightened users and the absolute confidence of Senior Management. Their function is to provide a comprehensive range of on-line systems serving the entire needs of the organisation.

Senior Programmer (RPG)

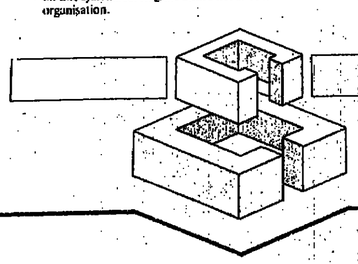
To cope with the continual demand for new systems, Lyons Tetley are now in a position to offer a SENIOR PROGRAMMER a quite exceptional career opportunity. Talent is the keyword. Although the development software is RPG III, the company is prepared to recruit an RPG II programmer anxious to move into a SYSTEM 38 environment and take advantage of a comprehensive training policy. This is, however, a senior appointment and requires the experience and skill to play a team-leading role in the planning and implementation of new systems. The successful applicant will be reliable, resourceful, and feel comfortable in a role with plenty of user contact.

The conditions of employment are first-class. The starting salary will be c.£10,500 and the list of additional benefits is most impressive. The offices are based in GREENFORD, MIDDX. close by public transport and offering ample car parking facilities.

As we have already said, this is an outstanding career opportunity. Lyons Tetley is part of a large group of companies committed to growth and profitability. Company policy is to recognise the individual and develop talent to its full potential. YOU WILL FIND IT VERY HARD TO LOCATE A COMPARABLE VACANCY IN TODAY'S MARKET.

For further information and immediate appointment for interview contact Cullen & Company without delay quoting REF: MT/CW2.

Lyons Tetley



Cullen & Company
Suite 61, London House
271/273 King Street, Hammersmith, London W.6,

01-741 8011 Ext 248

AMBITIOUS YOUNG PROGRAMMER?

Our Client is currently committed to a major development programme, which has resulted in the need for a number of experienced, ambitious young programmers.

These positions are not average maintenance/application coding positions; quite the contrary. The successful applicants will be fully integrated into the development teams, and will have every opportunity to develop their talents.

Our requirement is simple; sound experience of at least one high level language is the only technical prerequisite, but a willingness and keenness to devote your energies to the team and to the product is essential.

In return, the Company offers excellent salaries and working conditions, a professional attitude to career progression, and, where appropriate, relocation assistance to a pleasant part of the country.

For further details contact us either by sending your cv to the **Freepost** address below or by telephoning **044282 6744** during office hours. Alternatively telephone either **Geoff King** on **0296 630506** or **Sue Onslow** on **044282 2335** evenings and weekends.

GKS Recruitment

FREEPOST, 1b Church Yard, Tring, Herts. HP23 5AE

Software Engineers

looking to break into Technical Management?

and earn up to £12,500

Good. Because with two years real-time experience you could be eligible for an exceptional opportunity.

Where else could you be trained into a management role without jeopardizing your technical expertise?

Only a company with a reputation for producing managers who lead by example could offer you the necessary training. Here small teams of engineers are led by software professionals who retain their hands-on involvement in system design from initial feasibility stage.

Utilizing advanced software techniques on micros they are responsible for guiding a project through to its final implementation. With experience of any high level language or assembler you could be involved in this specialised area of advanced high technology electronics.

For further details telephone in strictest confidence Miles Richards on 01-938 1804 (24 hrs) 01-847 2385 Evenings 7-9 p.m.

IPP Information Processing People
Specialist Recruitment Consultants
20 Kensington Church St, London W8 4EP Tel: 01-938 1804. Telex 22861.

There's more to housing than bricks and mortar...

Imagine you've got to design the software for a big local authority's housing allocation and benefits system. How on earth do you write in such abstract concepts as fairness and need?

How do you set about designing a system to control a large local authority's finance and budgeting system? How do you integrate the system into the authority's existing financial database?

Sounds interesting?

Then you could join us here in Reading, writing, designing or even project managing exactly the sort of applications systems we've been talking about.

What you'd be doing is creating highly complex technical solutions to problems that have impact on real situations.

We can call on ICL's applications builders and other powerful development tools that take the hard slog out of the software development, and let you concentrate on the more creative aspects.

Briefly we're looking for *systems designers* with 5-7 years applications experience with salaries up to £15K for those with IDMS/TPMS experience.

We're also looking for *programmers* with upwards of two years COBOL experience, ideally on larger database systems. And for them we're offering up to £9,500.

If you talk to Mrs Charlie Reames on Reading 586211 you'll have the opportunity to learn a lot more about Public Administration Systems Centre and about the way your career could develop with ICL's applications and work on the development of sophisticated systems to meet real user needs, using the latest tools and technology.

Whatever the outcome of that conversation may be, one thing's certain.

You'll never look at your own Town Hall in quite the same light again!

Alternatively you can write to her at ICL, Kings House, Kings Road, Reading, Berks.

We should be talking to each other. ICL

(6222)

UNIX AND 'C'
Your passport to the U.S.A.

If you have a degree and at least six months' Unix and 'C' experience then our client, a top U.S. consultancy, would like to hear from you.

We are looking for programmers and systems programmers who wish to utilise and expand their skills in an environment at the forefront of Unix development. In return we offer permanent positions with a salary range of 35,000 to 45,000 dollars.

Live and work in New Jersey where you get the benefits of a picturesque non-urban location and yet still within a short distance of New York with all its exciting amenities.

An extremely generous relocation package includes:

- Door to door family relocation
- Full family medical insurance
- Free initial accommodation
- Advice on settling in and local amenities
- Sponsorship for HI visa

If you feel that you can meet the challenge then telephone Melanie Lindeman or Lesley Thompson on 01-499 7761 to arrange an immediate interview.

Lloyd Chapman Associates

123, New Bond Street, London W1Y 0HR 01-499 7761

(6238)

SYSTEMS PROGRAMMERS — UK/ABROAD — £20,000++

An international software house needs highly motivated DP professionals for exciting new customer support projects at home and abroad. Applicants must have three years' systems programming experience with a sound technical background of MVS/JES, CICS and other associated IBM software. The company is offering an excellent remuneration package together with outstanding career progression. Ref: A960

DEC PROGRAMMERS — BUCKS/LONDON — c.£12,000

Our client, a leading software organisation, needs DEC programmers to perform customer support roles within the UK and abroad. Applications include banking and other financial applications packages together with communications software and hardware support. Applicants must have COBOL, BASIC (+) or AIMS, together with good communicative skills. Experience of DEC VMS, HSX 11, or RSTS/E would be an advantage. Excellent training facilities and opportunities for advancement in a fast-growing market. Ref: D1063

6 Months RPG3? — KENT — c.£11,000

Our client, a leading financial consortium, are seeking someone to assume the role of PROGRAMMER/ANALYST to work on their recently installed System 38. Financial applications expertise would be advantageous. Excellent company benefits apply. Ref: B1051

GSD SENIOR OPERATOR — KENT — c.£8,000 + MORTGAGE

A leading financial organisation is seeking someone with a minimum of 18 months' IBM System 34/38 experience to join their expanding operations department. A well defined career path together with an excellent benefits package apply. Ref: A1066

DATA CONTROL CLERK — LONDON — £6,600+

A leading financial organisation require an experienced data controller for their expanding division. MORTGAGE facilities together with other excellent benefits are offered. Ref: B668

BUICK COMPUTER SERVICES
RECRUITMENT DIVISION
72 Rochester Row
Victoria · London SW1P 1JU
Tel: 01-834 0061 (24-hours)

Coventry Lanchester Polytechnic

Computer Centre

Programmer/Advisers
£7,191-£8,712 or £9,060-£10,539

Required to work as members of a team developing the usage of the VOS operating system, X25 networking and similar software on the Polytechnic's Harris Computers.

Applicants should have a degree or equivalent in Mathematics, Computer Science or other relevant discipline, and have experience in a scientific, technological or commercial field. Arrangements for research towards a higher degree can be made.

Details from: Assistant Personnel Officer, Coventry (Lanchester) Polytechnic, Priory Street, Coventry CV1 5FB. (Please enclose a large self-addressed envelope.) Closing date, Friday, November 4th, 1983.

An Equal Opportunity Employer

(6094)

OXFORD UNIVERSITY COMPUTING SERVICE

ADVISOR/USER LIAISON OFFICER/TECHNICAL AUTHOR

The Service runs an ICL 2988 and three VAX 11/780 computers. Oxford Users also have access to the CRAY 1S at ULCC and the Cyber 205 at UMRCC.

The Service requires an Advisory Programmer who will also specialise in documentation. Liaising with remote sites or teaching the use of local and remote computers may also be part of the post.

Salary from £6,310 to £14,125 per annum according to age and experience.

Further details and application forms may be obtained from Mrs Mealing, Computing Service, 13 Banbury Road, Oxford, OX2 6NN. Telephone (0865) 56721.

Closing date for applications is Friday November 11, 1983.

(5699)

SALES OPPORTUNITIES
KUWAIT

Diyar United Trading & Contracting Company, one of Kuwait's fastest growing distributors of Prime and Calcomp systems, are seeking talented and ambitious sales executives for their Kuwait office.

The ideal candidates should have three to five years' sales experience and account management with at least two years' preferably on project management, draughting/graphics applications.

Responsibility will be to develop, maintain and achieve sales targets within a specific market.

Experience on Prime and Calcomp products would be a distinct advantage.

The company offers attractive basic salary related to experience plus generous commission structure. Also usual expatriate benefits will apply.

Interviews will be held in London. Please send completed C.V., telephone number, address, and if possible telex number.

Diyar United Training & Cont.Co.

To:
Marketing Manager
Diyar United Trading & Contracting Company
P.O. Box 44240
Hawalli – Kuwait

(6031)

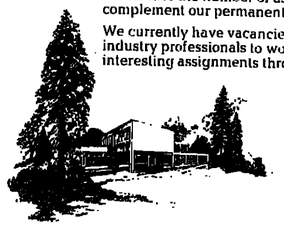
ANALYSTS TECH SUPPORT — **PROGRAMMERS** — **ANALYST PROGRAMMERS**

Are you a* FREELANCER *or perhaps thinking of becoming one? Then talk to P-E today.

P-E is one of the leading international software houses and consultancies working with clients in the UK, Europe, Middle East, Asia, Africa, North and South America.

To sustain our record of success and growth we now require to increase the number of associate staff available to us to complement our permanent employees.

We currently have vacancies for experienced computer industry professionals to work on medium and long-term interesting assignments throughout the UK and overseas.



Immediate requirements include analysts, senior programmers and programmers with any of the following skills:

CICS and DL/1 or IMS DB/DC and ADF
IBM 8100 DPPX
System 34 RPG II and System 38 RPG III
IBM 4300 COBOL, TOTAL, CICS and ROSCOE
ICL 2900 IDMS/TPMS
HP 3000, IMAGE and QUERY
ADABAS/NATURAL designers (overseas – aged over 30, with degree)

We also have vacancies for permanent staff at both locations. In order to make more of your career please telephone or write to:

Kerry Nash
P-E Computer Services Limited
Park House
Egham
Surrey TW20 0HW
Tel: 0784 34411

Peter Moore
P-E Computer Services Limited
Winchester House
Fountain Street
Manchester M2 2EF
Tel: 061-228 2776

(6185)

Ticketshop

IF YOU'RE A REALLY GOOD PROGRAMMER/ANALYST THIS JOB COULD BE JUST THE TICKET!

Ticketshop backed by multinationals is a new rapidly expanding company in the UK being the leading supplier of computerised booking systems to the entertainment industry.

Our growth means we require a Programmer/Analyst with considerable experience in extended Basic plus and Digital PDP 11 systems to work on enhancements and expand our existing credit card EFT system.

The applicant must have the ability to maintain the system software, develop and programme new projects and deal with end users.
The opportunity exists for a person to move quickly into a senior position within the company. If you feel you have the background experience and personality to fulfil this demanding role, write now with detailed cv to: Richard Klim, TicketShop Limited, 1A Union Street, Reading RG1 1EU.

FOR
CLASSIFIED
ADVERTISING USE
DIRECT LINES

RECRUITMENT CONSULTANCIES
(01) 661 8787

DIRECT ADVERTISERS
(01) 661 8080

PROGRAMMERS
to £10,000 p.a.
Cambridgeshire

One of the world's leading chartered accountancies with offices in most countries and throughout the UK, seek to expand their national computer centre.

Their current requirement is for Programmers with a minimum of 12 months' practical, commercial experience using BASIC-PLUS, to work on accounting packages for external clients as well as in-house users. Their current hardware is based on PDP11 systems.

A basic salary between £7,500 and £10,000 p.a. is dependent on experience and other benefits include four weeks' holiday, pension, life assurance and BUPA schemes. Assistance with relocation will be considered for the right applicant.

For further information and an immediate local interview, please telephone Bishop's Stortford (0279) 506464.

ATA COMPUTER RECRUITMENT
Portland House, 29 Basbow Lane
Bishop's Stortford, Hertfordshire
(Out of hours answering service)

(6053)

ata

IBM OPERATIONS MANAGER
SURREY

Our client, a major financial organisation with a Data Centre located in Surrey is now able to offer an excellent career opportunity in IBM Computer Operations Management. As a large IBM MVS user their challenging technical environment currently involves an expansion of database and teleprocessing developments.

This exciting environment needs to be supported by a professional management team and following the reorganisation of the Shift Operations department, our client is seeking to recruit a person who will be one of four Shift Managers responsible for a group of operations and support staff.

Candidates must be able to offer a strong background of IBM Operations experience preferably gained in an MVS/IMS environment, and should possess the technical and supervisory skills necessary to maintain a high standard of computer operations service.

c£18,000
(INCLUDING SHIFT PREMIUM)
+ COMPANY CAR
AND EXCELLENT BENEFITS

An excellent remuneration package is available with this position and the range of benefits are those normally associated with a financial organisation including a subsidised mortgage and the provision of a company car.

For further information regarding this position either telephone or write to DP Selection Services quoting reference WA271.

dp SELECTION SERVICES
A member of the DP Support Services Group

7 Swallow Street, London W1R 7HD
"We look forward to hearing from you."

01-434 2042
(24 hour Ansaphone)

(6191)

PUBLIC SECTOR APPOINTMENTS

TRAINING OFFICER
(INFORMATION TECHNOLOGY)

Salary £10,677-£11,784

This post is part of the Central Training Section which provides a training resource within the council and to its 7500 employees.

Applicants should be familiar with office-based information technology, ideally in the context of local government. Developing and arranging training activities which promote an awareness of new technology and which help users to identify appropriate applications will be an important part of the job.

The ability to apply training solutions to the problems individuals face when confronted by information technology in their day-to-day work will be necessary. In addition, applicants should have the ability to produce in-House training manuals as new technology systems are introduced.

Applicants should have had relevant training experience within a large diverse organisation. They will also need to demonstrate a full range of training skills, especially an ability to relate training to wide organisational issues. An appropriate training/personnel or information technology related qualification will be an advantage although relevant experience will also be looked for.

Applicants should also be able to demonstrate a sensitive approach to the introduction of new technology since many staff still have genuine concerns about the impact of new technology on their jobs and careers.

For informal discussion contact Peter Varlett or Penny Bridges on 01-852 9121 extensions 273 or 267.

Open to Job Sharing arrangements.

Application form, returnable by 11th November 1983 and detailed job description from Acting Chief Personnel Officer, Town Hall, Catford, London SE6 4RU or telephone 01-690 7666 (24-hour Ansafone service) quoting reference CE372(B) and job title.

LONDON BOROUGH OF LEWISHAM

Our jobs are open equally to all races and both sexes

(6227)

FINANCE DEPARTMENT

Assistant Programmer/ Analyst Scale 5

Salary £7,191 to £7,896 p.a. plus £747 London Weighting

Required to work on a Redifusion R2800 minicomputer. The person appointed will be involved in all aspects of the development and implementation of various new systems as well as the maintenance of existing systems, and will be required to work with the minimum of supervision.

Applicants should have two years' experience of commercial programming on minicomputers. Previous experience of Redifusion minicomputers would be an added advantage.

BRENT IS AN EQUAL OPPORTUNITY EMPLOYER. APPLICATIONS ARE WELCOME FROM CANDIDATES REGARDLESS OF RACE, NATIONALITY, ETHNIC OR NATIONAL ORIGINS, AGE, MARITAL STATUS, SEX, SEXUAL ORIENTATION AND FROM DISABLED PERSONS.

Application forms and job descriptions from the Personnel Division, Room 1, Brent Town Hall Annexe, Forty Lane, Wembley, Middlesex HA9 9BR, returnable November 16th, 1983, telephone 01-903 0371 (24-hour Ansafone service). Reference number PJ380 must be quoted.

London Borough of **BRENT**

(6180)

STAFFORDSHIRE COUNTY COUNCIL
EDUCATION DEPARTMENT

SYSTEMS ANALYST/ TEAM LEADER
(RE-ADVERTISEMENT)

EDUCATION COMPUTING CENTRE, UNITY HOUSE, HANLEY

SALARY – Scale 6, £8,154 to £8,712 p.a.

To undertake analysis and design work in relation to Software Creation Tasks, be aware of overall priorities and monitor programmes to ensure completion dates are achieved.

All applicants are asked to note that it is the County Council's view that it is desirable for their employees to be members of an appropriate Trade Union.

Further particulars and application form enclosing s.e.e. from:
Chief Education Officer, Staffing Non-Teaching Section Education Office, Tipping Street, Stafford
Closing date: November 10th, 1983

(6168)

De Havilland College

The Campus, Welwyn Garden City, Herts.

Department of Computer Studies (Based at Elstree Way, Borehamwood)

Lecturer Grade II and Lecturer Grade I

with experience of commercial data processing, preferably in micro and/or mini computers. Applicants with lecturing experience and teacher training, with preferably a knowledge of two of the programming languages, BASIC, Pascal or COBOL.

Assistance with removal expenses in approved cases.

Forms and further details from The Principal, de Havilland College, The Campus, Welwyn Garden City. (Telephone: Welwyn Garden 26318, ext. 21.)

(6169)

CITY POLYTECHNIC OF HONG KONG

The Hong Kong Government has appointed a Committee to plan the establishment of a second polytechnic in Hong Kong. To be named the City Polytechnic of Hong Kong, the institution will have an initial target of the equivalent of 8,500 full time students by the early 1990s and a planned capacity for an ultimate population of 13,500. The Polytechnic expects to be able to enrol its first students in Autumn 1984.

It is intended that the study programmes should be re-shaped on a modular structure with a strong vocational flavour. The majority of courses will be at professional and higher technician levels, and a substantial number will be day-release and evening courses. There will also be degree programmes, although the number of students on such programmes will not exceed 30% of the total student population.

The Planning Committee has made appointments at Director, Associate Director and Head of Department levels. Some of them are already in post. Meanwhile, applications are invited for the following posts:

At Head of Department Level:
Heads of the following initial administrative departments:

HEAD (COMPUTER CENTRE)
(Ref. No. CP/CC/001/83)
To be responsible for the development and operation of the Computer Centre.

MANAGEMENT INFORMATION OFFICER
(Ref. No. CP/MIU/001/83)
To be responsible for the development and operation of a Management Information Unit. The function of the Unit will be to collect information from a variety of sources on all aspects of Polytechnic activity, to rationalise methods of data-presentation and, as an end-product, to supply such data as may be required for planning purposes.

The Heads of administrative departments will be expected to work in conjunction with three Associate Directors (Academic Planning, Resources Planning and Administration) and to ensure that the administrative systems provide a proper framework for planned academic and administrative developments.

At Principal Lecturer/Senior Lecturer/Lecturer Level:
DEPARTMENT OF COMPUTING STUDIES
(Ref. No. CP/COMP/002/83)
Specialism: Technical Areas: COBOL, PASCAL, ADA, 4th generation languages, Database, Systems Analysis and Design, Networking and Graphics. Applications areas: Finance, Accounting, Banking, Marketing, Manufacturing, Process Control, Education, Engineering and Management.
Successful candidates are expected to assist the Head of the Department to plan, develop and administer new programmes and course modules up to degree level: and to teach in their specialist areas. Personal research will be encouraged. Preference will be given to candidates with a successful research record.

Salaries:

Heads of Departments	:	Within a range but not less than HK$277,200 p.a.
Principal Lecturer	:	HK$208,680 – HK$256,320 p.a.
Senior Lecturer	:	HK$176,928 – HK$218,280 p.a.
Lecturer	:	HK$94,440 – HK$188,120 p.a.

(£1 = HK$12.60 – Sterling equivalent as at October 12th, 1983)

Terms and Conditions of Service:
For Headship posts, the initial appointment will be made on fixed-term contract of four years, at the end of which a gratuity equal to 25% of salary earned over the whole contract period will be payable. Benefits include long leave, heavily subsidized housing, medical and dental benefits and, where appropriate, children's education allowances and leave passages.
For Principal Lecturer/Senior Lecturer/Lecturer posts, appointment will be made initially on two-year gratuity-bearing contract terms with a terminal gratuity equal to 25% of basic salary received over entire contract period. Benefits include long leave, subsidized accommodation for overseas appointees and local appointees on a salary of HK$12,060 p.m., or above, medical and dental benefits and, where appropriate, children's education allowances and leave passages.
Applications: Application forms and job specifications are obtainable from the Association of Commonwealth Universities (Appts.), John Foster House, 36 Gordon Square, London WC1H 0PF. Complete forms should reach the Secretary to the Planning Committee, P.O. Box 95441, Tsim Sha Tsui Post Office, Hong Kong, by November 15th, 1983. One additional copy should also be lodged with the Association of Commonwealth Universities. Please mark appropriate reference number on cover. For the posts at Headship level, candidates who have applied in response to the previous advertisement in April 1983 need not re-apply.
Interviews: For all the above posts, interviews of United Kingdom candidates on the shortlist are planned to take place in London in the second and third weeks of January, 1984. The recommended candidates for Head of Department posts will be invited to attend final interviews in Hong Kong around the third week of January.

(6146)

Essex County Council
CHELMER INSTITUTE OF HIGHER EDUCATION
School of Computing

SYSTEMS PROGRAMMERS-LII

Two Systems Programmers are to be appointed to the Systems Division within the School of Computing. The successful candidates will be required to provide systems support for a large Prime installation consisting of a P750 and a linked P2250 at the Institute together with a number of networked P2250 systems in Essex Colleges. Some work with microcomputer systems is also likely.

Post A will be closely involved with the support and training needs of the remote sites. Post B will

specialise in systems and communications aspects of the P750.
Salary: Lecturer II £7215-£11,668 per annum.

Applications forms and further details available from the Principal Administrative Officer, Chelmer Institute of Higher Education, Victoria Road South, Chelmsford CM1 1LL, to whom applications should be returned by 11th November, 1983. Telephone Chelmsford 354491 Ext 247.

(6220)

UNIVERSITY OF NEWCASTLE UPON TYNE

COMPUTING LABORATORY
DEMONSTRATOR

Applications are invited for the temporary post of Demonstrator in the Computing Laboratory which is tenable immediately for a period of three years. Candidates in any area of specialisation will be considered. This post will be particularly attractive to a Ph.D. student who needs some extra time to complete his/her thesis.

Salary will be at an appropriate point on the Grade 1B (Bau) scale, £6,310-£9,530 per annum, according to age, qualifications and experience.

Further particulars may be obtained from the Deputy Registrar (F.P.), The University, 6 Kensington Terrace, Newcastle upon Tyne, NE1 7RU, with whom applications (3 copies) together with the names and addresses of 3 referees, should be lodged not later than 11th November, 1983. Please quote reference CW6172.

(6172)

NORTH STAFFORDSHIRE POLYTECHNIC
COMPUTING SERVICES UNIT
STAFFORD

PROGRAMMER/ANALYST
(OPERATING SYSTEMS)

Programmer required with some experience of developing operating systems, to join our team responsible for system development and maintenance of the following equipment:
ICL 2966, GEC 4082, VAX 11/780 and various microcomputer systems.
Experience of one or more of these systems will be useful, but a proven record of successful system programming for other machines could be appropriate.
Salary up to £8,712 per annum depending on qualifications and experience.
Application forms and further particulars may be obtained from The Personnel Officer, North Staffordshire Polytechnic, College Road, Stoke on Trent, ST4 2DE. Tel: (0782) 45531, ext 297.
Closing date for completed applications, 14th November 1983.

(6216)

HEREFORD & WORCESTER COUNTY COUNCIL
WORCESTER TECHNICAL COLLEGE

Applications are invited from suitably qualified and experienced candidates for the following post.

DEPARTMENT OF SCIENCE AND MATHEMATICS

Lecturer Grade II Computing

The person appointed will be involved in the teaching of Data Processing, Systems and Programming, in a wide variety of courses in the college. The successful candidate will also be expected to assist in the development of new courses.

An ability to programme in Cobol and/or Pascal would be an advantage.

Applicants must possess a degree or equivalent professional qualification preferably with commercial and/or teaching experience.

Salary: Lecturer Grade II £7,215-£11,668.

Further details and an application form can be obtained from The Principal, Worcester Technical College, Deansway, Worcester WR1 2JF upon receipt of a stamped, self-addressed envelope, foolscap size. Please quote reference BM/CW.

(6231)

RE-ADVERTISEMENT

Principal Computer Officer
(Ref. L245)

Salary (POIA) £10,242-£11,052 p.a. plus £747 London Weighting

Senior Computer Officer
(Ref. L247)

Salary (Scale 6) £8,154-£8,712 p.a. plus £747 London Weighting

Brent Library Service is acquiring a mini-computer in order to provide an integrated on-line system including stock acquisition, cataloguing, and circulation-control processes initially. Development of viewdata and other information and office systems is planned for the near future. These two postholders will be responsible for the completion of initial work on this project and for its overall operation and development thereafter.

Applicants for the post of Principal Computer Officer must have proven experience in staff management and computer operations at a senior level, together with the ability to plan, organise, negotiate with suppliers and manage creatively a complex project of this nature.

Both posts require a knowledge of public library systems, of developments in new technology, and the ability to work effectively under pressure.

Previous applicants for these re-advertised posts will automatically be considered again.

For informal discussion of these posts, please contact John Clarke or Sean O'Reilly on 01-451 3444.

BRENT IS AN EQUAL OPPORTUNITY EMPLOYER. APPLICATIONS ARE WELCOME FROM CANDIDATES REGARDLESS OF RACE, NATIONALITY, ETHNIC OR NATIONAL ORIGINS, AGE, MARITAL STATUS, SEX, SEXUAL ORIENTATION AND FROM DISABLED PERSONS.

Application forms and job descriptions from the Personnel Division, Room 1, Brent Town Hall Annexe, Forty Lane, Wembley, Middlesex HA9 9BR, returnable by Monday, November 21st, telephone 01-903 0371 (24-hour Ansafone service). Reference numbers must be quoted.

London Borough of **BRENT**

(6161)

Division of Computing
Information Technology

Senior Lecturer/Lecturer II Lecturer II/Lecturer I

Candidates should be graduates (or equivalent) with experience of programming in one or more languages (eg COBOL, Assembler, Pascal) together with expertise in areas such as Data Processing, Real-Time Systems, Office Systems, Graphics, Operating Systems.

Computing staff teach on a range of industry linked Higher Diploma sandwich courses, part-time BCS courses and specialist short courses.

Previous applicants will be automatically reconsidered.

Salaries inclusive of area allowance within the ranges:
Senior Lecturer £10,929-£13,689
Lecturer II £7,461-£11,814
Lecturer I £6,896-£9,981

Send SAE for further details and an application form to be returned within two weeks of the date of this advertisement to the Vice Principal, Slough College of Higher Education, Wellinton Street, Slough SL1 1YG.

Berkshire is an equal opportunities employer.

Slough College

(6217)

SURREY EDUCATION COMMITTEE

NORTH EAST SURREY COLLEGE OF TECHNOLOGY
Reigate Road, Ewell, Epsom, Surrey KT17 3DS

Applications are invited for the following posts to be filled as soon as possible:

DEPARTMENT OF APPLIED SCIENCE

Principal Lecturer in Information Technology

Lecturer I in Computing

Salary Scale: PRINCIPAL LECTURER £12,519-£15,744 p.a.
LECTURER I £6,849-£9,735 p.a.

Plus £246 p.a. London Fringe Allowance. Generous relocation expenses in approved cases.

Please send a stamped addressed envelope for further particulars and application form from the Vice-Principal.

(6221)

School of Electronic Engineering and Computer Science

PART-TIME INDUSTRIAL PLACEMENT TUTOR
COMPUTER SCIENCE

The School is seeking a person to assist part-time in the work of placing students in industry for periods of practical training as part of the undergraduate courses of the BSc Honours/BSc degree sandwich course in Computer Science.

Applicants for the post should have experience of the computer industry and an ability and willingness to act as liaison between students, academic staff and managerial staff in industry. The actual hours will be subject to agreement but the tutor will be required to work an average of 1½ days a week throughout the year.

Further details from School Administrative Officer, School of Electronic Engineering and Computer Science, Kingston Polytechnic, Penrhyn Road, Kingston upon Thames, Tel. 01-549 1366.

Programming Professionals

Cobol
Mini-Computer Environment
North West
Salary to £12,000
+ Relocation

Our client is a highly successful, profitable company operating at the forefront of technology. Located in an attractive area of Cheshire, it is well serviced with motorway, road and rail links. Following a major review of its requirements, the company has identified the following career opportunities:–

Team Leader
Circa £12,000

The successful candidate will lead a team of around six programmers working on a variety of management information systems, primarily developed on a powerful mini-computer. It is likely that he/she will have at least five years programming experience including some staff supervision. The person appointed will be responsible for imposing and maintaining programming standards within the team, and knowledge of structured programming techniques would be of particular interest.

Senior Programmers
Salary between £9,600 and £11,300

These positions represent excellent opportunities to join small project teams engaged on a range of commercial systems. The company offer a stimulating working environment developing systems on-line and using database.

Candidates for all positions should be able to demonstrate sound **Cobol** skills, gained on any equipment, either mini or mainframe, preferably in an **on-line** environment using **database** techniques. Full training will be provided to familiarize the successful candidates with hardware and software.

Career prospects and conditions of employment are excellent, including flexi-time, 37 hour week, over six weeks holidays and a relocation package where appropriate.

OCC

Specialists since 1971 in UK and International computer & technical appointments

OCC Computer Personnel
5 Hospital Street
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Cheshire
(0270) 627 206

For further details, please contact Barry Turton on (0270) 627206 weekdays, or Alsager (09363) 4743 during evenings and weekends, or write to him at the address across.

SUPERMINI SUPPORT!

Slough £13K + bonus + car

Our clients have recently adopted UNIX for their 32 bit range – they already have successful 4GL, Database and TP Systems – ie a powerful, modern, cost-effective product range and your future credentials!
If you have relevant technical experience (some UNIX preferred) plus enthusiasm, then they can offer you a busy life, recognition and rewards, variety and lots of client contact: you will become the 'resident expert' on specific products.
Call Allan Sanders for more detail now on 01-549 6441 (24 hours) Ref: CA339

db executive (kingston) ltd
Technical Support Specialists

OPERATORS/DATA CONTROLLERS
IBM MVS/JES 2 to £10,500 + PERKS

An extra shift at a financial company means the need for new people.
Extensive knowledge of MVS/JES 2 with IMS and DB/DC is required and VM would be desirable. Good JCL necessary for data control positions.

TECHNICAL SUPPORT
IBM DOS/VSE, VM to £12,000

Well-respected name seek two persons with extensive knowledge of DOS/VSE, VM and an operations background to set up new client systems.

ASPECT COMPUTER RECRUITMENT 01-242 8786 (24 hrs.)

(6215)

PUBLIC SECTOR

Leeds Eastern Health Authority

COMPUTER PROJECTS LEADER

Salary Scale £8,367-£10,277 p.a. (Scale 6)

Computer Services Officer required to lead a small team providing computing services to the Authority including its analysis, programming and day-to-day operational requirements at such services. Work will initially be carried out on a CMC REALITY to further develop the District Planning Information Systems and an on-line Stock Control and Accounting System. Future developments will include Financial and Management Information Systems on CMC REALITY, ICL DRS 20 and MICROS, with links to a major on-line Patient Administrations System at multi-sites level. Applicants should have a sound systems analysis and programming background and be capable of supervising and motivating staff.

Application forms (to be returned by Monday 14 November 1983) from the District Personnel Dept., Shadwell Wing, St James's University Hospital, Beeston Street, Leeds LS9 7TF, tel (0532) 433144 ext. 5335.

(6230)

University of Glasgow
COMPUTING SERVICES

APPLICATIONS PROGRAMMER

A vacancy exists for a Programmer to work in the Applications Software Division of the University's Computing Service to be concerned primarily with the maintenance of existing program packages on both the central ICL 2988 computer and on distributed microcomputers, together with the development of new applications.
Applicants should be in the possession of a good Honours Degree (or equivalent) and appointment will be made on Grade IA of the national Other Related Staff scales, currently in the range from £7,190 to £11,615 per annum.
Further particulars may be had from, and applications (5 copies) should be addressed to: The Secretary of the University Court, (Room 18), The University of Glasgow, Glasgow G12 8QQ, to arrive not later than 14th November 1983, quoting Reference 5100/1F.

(6228)

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Software Consultancy

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Software Development Engineer

Qualified to degree level in Computer Science/Engineering, with at least two years' experience in the design of commercial software packages using high level languages such as Pascal, C, COBOL, Lisp, Forth and ideally Assembler.

Electronics Development Engineers

A degree in engineering specialising in electronics plus at least two years' industrial experience in the design of electronic circuits, microprocessor hard and software leading to new product development.

*This statement reflects the appeal of a company that places considerable emphasis on the development of individual skills and career progression. AIM Cambridge is a fast-growing technical consultancy company, specialising in software development as well as electronic, microprocessor and mechanical engineering. Strongly geared to production, AIM innovates, develops and engineers new hardware and software products for client companies. Continuing growth has created the following vacancies:

You will join teams of dedicated professionals and have involvement from product concept through development to production. In return for a high degree of commitment and professional expertise, our client offers attractive conditions and prospects in a rural location with easy access to major towns.

Interested? Either telephone for an application form or send your c.v. to Laurence Pattel quoting ref: DE.T.

Cambridge Recruitment Consultants

1a Rose Crescent, Cambridge CB2 3LL. Telephone: 0223 311316.

COMMUNICATIONS

LAN PROJECT LEADER

BERKSHIRE — **to £14,000**

A leading computer manufacturer currently developing Local Area Networks seeks a Project Leader to lead a small team. Ideally candidates will have communications design experience in PASCAL or, if possible C for 68000/UNIX products.

REF: CW 43/1

COMMUNICATIONS SPECIALISTS

LONDON — **to £17,000**

One of Britain's leading Information Systems contractors have a number of openings for Consultants with a minimum of 8 years experience, primarily in an Information Processing environment. Typically experience should include knowledge of Telecommunications industry Systems Design, Marketing Activities x 25,150 Standards and Office Automation.

REF: CW 43/2

ACCOUNT MANAGER

BERKSHIRE — **to £18,000**

The Computer + Communications sectors of a leading software company require a Manager to sell/market the company's services and to Manage their financial/Contractural side of appropriate projects. Technically candidates should have experience of IBM/ICL communications, X25 and Project Management plus selling LANS marketing experience are added requirements.

REF: CW 43/3

S. IRELAND

PASCAL/C — **to £14,000**

European division of a Major American Corporation based in the south of Ireland is developing microprocessor-based office automation systems based M68000 under UNIX and C. Candidates should have worked with PASCAL or C with exposure to Assembler, desirable operating experience should include one of VMS, RSX, TOPS-20, UNIX, CP/M or MS/DOS.

REF: CW 43/4

X 25/LANS

HERTS/BEDS — **£9,000-£13,500**

A Computer manufacturer offers a choice of location near M1 motorway to experienced programmers. The successful candidate will work on the design and implementation of communications software projects. A graduate with five years experience some of which should have been in communications (preferably X25 or LANS based) should apply.

REF: CW 43/5

BANKING NETWORKS

LONDON — **to £10,500 + BENEFITS**

Major international bank developing Local Areas Networks using UNIX and C require young software programmers to assist this development. Candidates should have a degree plus experience of a black-based language ie: PASCAL or preferably C. Short-term overseas travel is likely for the successful candidates.

REF: CW 43/6

HOLLAND

PLM — **to D.Fl. 80,000 + CAR**

A Dutch-based consultancy require Programmer/Designers to develop interface software for a 16-bit machine and an Intel 8086. Applications include emulating IBM Protocols, File Handling and Business Graphics etc. Candidates should have some experience of PLM, PL/1, Assembler and 780 Assembler.

REF: CW 43/7

C/UNIX

SURREY — **up to £15,000**

A relatively new communications company set up to develop Local Area Networks Software Products require young programmers with communications experience. Candidates requiring experience of C UNIX will get an early opportunity to develop these skills. Graduates with real-time experience using PASCAL or similar should apply.

REF: CW 43/8

DATAMATICS
RECRUITMENT SERVICES
01-399 9183
Datamatics, Freepost, Surbiton, Surrey KT6 5BR

MILITARY & INDUSTRIAL SYSTEMS

AEROSPACE

HAMPSHIRE — **to £12,000**

A senior software engineer is required to take responsibility as Software Task Engineer in a multidisciplined R & D team and may be responsible for a number of Software Engineers. Several years experience of Aerospace applications in a real time environment and a knowledge of ASSEMBLER/Modern High level language is desired.

REF: CW 43/9

NAVIGATION SYSTEMS

SURREY — **to £16,000**

One of Britain's leading information systems contractors is seeking a consultant to work on Navigational Systems in marine and aircraft systems. Ideally the successful candidate will have a numerate degree plus five years' experience in the design and assessment of digital systems for inertial navigation, integrated navigation, radio and satellite.

REF: CW 43/10

IMAGE PROCESSING

NORTH LONDON — **£9,000-£10,000**

A highly respected manufacturer of image processing systems requires additional Software Engineers, to work on digital processing systems. You should have had at least one year postgraduate industrial experience and have programmed in Assembler during this period. Creative flair, committed interest and the willingness to succeed will result in extensive opportunities for career advancement.

REF: CW 43/11

PROCESS CONTROL

LONDON — **£11,000-£17,000**

The Industrial Group of a leading Software Company seek Consultants and Designers to development process control software for the food, drink and drug industries. Candidates dependent on level of experience will be offered a number of positions such as supervising projects, developing software on large projects, assisting teams in technical support role and producing specifications.

REF: CW 43/12

SIGNAL PROCESSING/RADAR

MIDDLESEX — **R & D ENGINEERS**

A major defence contractor requires Research & Development Engineers to design modern Military Radar and Electronic Warfare systems. In particular signal processing systems. Candidates should have 2 to 3 years DEC and MACRO 11 experience on real time military systems. REF CW 43/13

REAL TIME FORTRAN

MIDDLESEX — **to £11,000**

Our client is currently developing an emergencies services system based on Data General equipment. Candidates should have Fortran experience on real time applications, ideally using DG equipment and Command & Control systems.

REF: CW 43/14

CORAL/MASCOT

LONDON — **Up To £15,000**

A top consultancy commanding large contracts with the MoD require Professional Programmers and Software Designers to work on Real Time Defence Systems. Candidates should have a degree plus experience of CORAL and preferable MASCOT. Experience of CONTEXT and VAX machines would be helpful. Successful candidates' careers will benefit enormously by being associated with one of the top names in the industry.

Ref CW 43/15

The above appointments represent a selection of the vacancies that we are currently seeking people on behalf of our clients in the Hi-Tech areas. All these appointments involve permanent positions. In the first instance please send us a copy of your CV. (Alternatively telephone for an application form) so we may discuss your application in confidence on behalf of yourself and our clients.

DATAMATICS
RECRUITMENT SERVICES
01-399 9183
Datamatics, Freepost, Surbiton, Surrey KT6 5BR

CLASS OF '84

Right now you're working in companies or already in a training environment. If so, our plans for expanding our training establishments at new locations in Reading will be of great interest to you.

It is an opportunity for making the most of your in-depth software experience or add new dimensions to your hardware knowledge and career while broadening your horizons at the leading edge of computer technology.

As a member of our highly qualified team of professional instructors, responsible for over 100 special courses, you will be given every opportunity to make an individual contribution. Following a thorough initial induction period, you'll be conducting training courses with ample scope to bring your own ideas to bear both in developing new programmes and updating existing training modules.

This is a rare opportunity to join the world's largest minicomputer company and enhance your career prospects significantly — if you're as good as you think you are! If you're not quite sure how suited you may be, leave it to us to find out — we'll arrange a suitable test.

You're probably aged between 25-35, with a degree in computer science or numerate discipline — but it's far more important for you to have a strong background of relevant experience. Naturally, you'll be a confident, outward-going person with an innate ability to teach, possessing a quick, alert mind that enables you to think on your feet.

For those who are looking for more job satisfaction in a computer environment, we are looking for training specialists in the following areas:

CUSTOMER HARDWARE

Qualified people currently in Field [illegible] of existing electronics/computer instructors [illegible] for more career progression, perhaps you [illegible] Digital Design Engineer having graduated 2-3 years ago.

FIELD SERVICE

Qualified to Degree/HNC in electronics/computing with at least 2 years in the field working on computers. You may have had some training experience and are looking for career satisfaction passing on your skills to others.

CUSTOMER SOFTWARE

With at least 3 years' experience in programming or computer operations; perhaps currently an instructor in industry, or college teaching computing.

IN-HOUSE SOFTWARE

With in-depth experience in data communications or commercial products and their applications. You could be a Software Specialist or working in a software sales support role, or even teaching in a computer company or College of Technology.

For the selected men and women, the rewards of working for Digital are attractive. Salaries will be negotiated in line with qualifications and experience with the addition of an excellent benefits package, which includes relocation expenses, where appropriate.

For those who make a success of these highly visible roles, there are excellent career prospects of mobility within our expanding organisation, into other equally exciting functions as well as the obvious stimulation of developing your own communication skills and knowledge-base.

For a more rewarding and stimulating role that only computer teaching with Digital can offer, telephone Sarah Elliott on Reading (0734) 583555 ext 3272 for an application form or write to her at Digital Equipment Co. Limited, Fountain House, The Butts Centre, Reading, Berks. Ref: REA/5X4.

digital

Your next challenge: Computer Software/Hardware Training

(6070)

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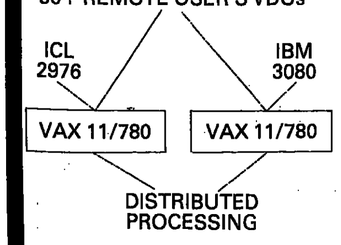

EQUIPMENT
TWIN COMPUTERS
LINKS TO
OTHER MAINFRAMES
AND MINIS
GRAPHICS

LANGUAGES
COBOL
with
FORTRAN OR BASIC

If you wish to work on interesting projects with up-to-date equipment, and have at least three years' programming experience, contact Mike Shore or Graham Thorpe on Littlewick Green 2166 or write for an application form to: Mrs Pam Polak at Southern Electricity House, Littlewick Green, Maidenhead, Berks SL6 3QB, quoting 18/83 by not later than November 8, 1983.

(6067)

Join The Tangent Team for Software Success!

CONTRACT OR PERMANENT

In just nine short years we have grown into a respected force in the international systems and software world. Now, with offices and work locations around the globe, our services are in demand by many major commercial organisations.

This is the background to our need for more D.P. Professionals to join our team and play a vital role in our continued success.

Specifically we would like to meet:

IBM S/38	ANALYST/PROGRAMMER	LONDON, AVON
MVS	SYSTEMS PROGRAMMER	DERBYSHIRE
DME	PROGRAMMERS	LONDON
COBOL, CICS, FRENCH SPEAKING	PROGRAMMERS	PARIS
IMS DB AND DC OR CICS	DATABASE ADMINISTRATOR, DESIGNER	LONDON
ADABAS, NATURAL	PROGRAMMER/ANALYSTS	SURREY
PL/1, ASSEMBLER	PROGRAMMER/ANALYST	ESSEX/SUFFOLK
VM/CMS (PL/1 USEFUL)	SYSTEMS PROGRAMMER	ESSEX/SUFFOLK
RETAIL MOTOR TRADE EXP.	ANALYST	BERKS
TPMS	PROGRAMMERS	LONDON
ASSEMBLER, SHADOW	PROGRAMMER/ANALYSTS	KENT
FORTRAN/COBOL, TPS	PROGRAMMER/ANALYST	LONDON
ICL 2900, VMEB	PROGRAMMERS	LONDON

Contract or permanent, we can offer you the range of positions and applications to broaden your technical expertise and enhance your career advancement into project management and beyond. We can also offer you excellent salaries plus the full range of benefits associated with a successful software house, including the opportunity to work on challenging projects throughout the UK, Europe, Middle East and possibly the USA.

Please contact:
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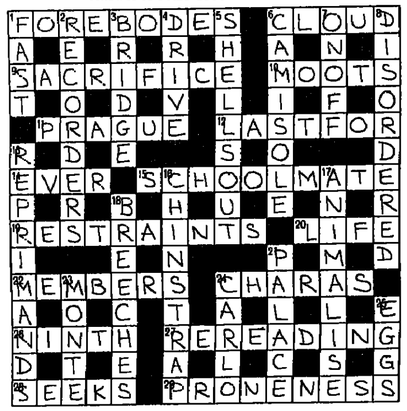
FAIRFIELD HOUSE, FAIRFIELD ROAD,
BRENTWOOD, ESSEX CM14 4LR.
TEL: BRENTWOOD (0277) 255755.
(24-hour answering service)

(6131)

tangent
success in the Software world

CROSSWORD

Answer to Prize Crossword No 45



This month's first prize of £10 has been won by Susan Playle, a computer programmer with Bacon & Woodrow in Southend-on-Sea. Prizes of £5 each are on their way to Peter Cooper, applied mathematician with Pirelli General in Eastleigh, Hampshire, and Alan Horner, systems development manager with Vallances in Bramley, Leeds.

INTERNATIONAL BANKING
OFFICE AUTOMATION

SYSTEMS PROGRAMMER

up to £15K

Lloyds Bank International Limited is to develop an advanced multi-function workstation for use in its branches in London and overseas. The project offers an opportunity for a mini or micro-computer specialist to become involved in this interesting and rewarding development.

The ideal applicant will have at least 5 years' development experience in some relevant fields such as

- ☐ operating systems,
- ☐ local area networks,
- ☐ office automation and communications,
- ☐ 'C' language or similar
- ☐ Unix or an equivalent

This appointment to our U.K. based staff located in the City carries substantial fringe benefits including advantageous loan facilities, free lunches and a non-contributory pension scheme.

Please telephone Simon Wootton on 01-248 9822 Extension 3694 for an Application Form and further details.

Lloyds Bank International

40/66 Queen Victoria St., London EC4P 4EL.

Financial Controller's Department

SYSTEMS MANAGER – IBM 38
£9,945-£10,539 PER ANNUM

Applications are invited for the above post from experienced Analyst Programmers to assume project responsibility for a variety of new applications being implemented on an IBM System 38. Applicants should have a minimum of four years' experience in RPG.

Benefits include flexible working hours, superannuation scheme, relocation expenses totalling approximately £1,900 and a casual user car allowance.

CLOSING DATE: 7th November, 1983. (6061)

Application forms from: The Personnel Section, Whitehall, Hartford Northwich, Cheshire CW8 1PJ (0606 74477)

VALE ROYAL DISTRICT COUNCIL

SMR
Sales & Marketing Recruiters Ltd
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SALES EXECUTIVES

HELP US SELL A REVOLUTION!

If you know anything about the problems of enabling computers and peripheral devices to communicate, you will appreciate how difficult it can become when this is extended into a multi-vendor situation, particularly within a local or geographical networking situation. Few have been able to master the problems and only our client can be said to have found a complete solution. This has been achieved by developing a high performance networking system, operating at speeds of up to 50 million bits per second, which encompasses the protocols of most significant major mainframe, mini and microcomputer manufacturers. In other words, our client enables computers of virtually any manufacturer, involved in a diversity of applications, to intercommunicate within a communications network at channel speeds, whilst at the same time sustaining their own independence.

So much for the technology; the company is substantial, but relatively new in Europe, yet a world leader in its area of specialisation. So, here is a chance to be in at the early stages of an assured success. Already, many prestigious accounts have been secured and expansion is very rapid.

The requirement is for two salesmen located in

LONDON and the SOUTH

both of whom will be experienced in selling either substantial mini/mainframe computers, or large-scale communications systems to major companies and institutions. A proven record of success embracing both existing and new accounts selling involving DPM and board-level negotiations, is essential. Familiarity with data communications and real-time systems will be an advantage, but not a necessary qualification.

We are prepared to negotiate a minimum compensation package of around

£30,000 + COMPANY CAR

which will include a guarantee for the first 12 months of employment, at a level no less than current earnings, as well as providing fringe benefits such as Health Insurance, Pension and Life Assurance.

Please contact Alasdair Scott, quoting reference WSD/103.

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MARSTON'S

require a

COMPUTER PROGRAMMER

at their Burton upon Trent Office

The company operate a Burroughs B5900 mainframe, which supports a network of 30 terminals. Applicants should have at least two years' COBOL programming experience, plus a sound knowledge of DMS and transaction programming in general.

The successful applicant will require to be resident in the Burton upon Trent area.

Salary c.£9,000 (negotiable)

Applications in the first instance, with c.v., should be forwarded to:

The Secretary, Marston, Thompson & Evershed p.l.c.
P.O. Box 26, Shobnall Road
Burton upon Trent, Staffs. DE14 2BW
to arrive not later than the 1st November, 1983 (6033)

ASHTON·TATE

dBASE

SOFTWARE TECHNICAL SUPPORT

dBASE

Industry leader in Micro Database Software requires an experienced dBASE II programmer to support users, developers and in house programs. It would be an advantage if you have:

★ Experience of CP/M, Assembler & Basic
★ Experience of Hardware/interfacing on micros
★ A love of your work

Growing at the speed we are – 150,000 users – your career development will be extensive. Planned activities include software evaluation, micro evaluation and allied activities.

Excellent starting package

Please reply in writing with full c.v. to:

Ian Turner
ASHTON-TATE (UK) LIMITED
Cofferidge Close
Stony Stratford
Milton Keynes MK11 1BY (6139)

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SMR
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Leaders in High Technology Recruitment

LAST YEAR OUR

SALES EXECUTIVES

EARNED AN
AVERAGE INCOME OF

OVER £40,000

In fact, the top salesman earned over £70,000!

If you look around you will see there are lots of job opportunities for experienced computer industry salespeople, but in reality they are no more than clones of each other, lost in the static survival of the computer establishment or the transient euphoria of micro-computers. Many are acceptable to those already committed to changing employer, but offer little incentive to those successful salespeople who would like to advance their careers if only the risk was not so profound. In contrast, this is one of those truly rare opportunities that must appeal to every accomplished salesperson within the computer industry.

Consider the following facts:

* We dominate one of the fastest growing areas of computing.
* We have a reference client list that looks like a 'Who's Who' of British industry.
* We get so many enquiries, there is virtually no need for prospecting.
* We provide highly comprehensive pre- and post-sales support.
* Our continual investment in R & D keeps us far ahead of competition.

If you add to this the wide scope for personal advancement within our young and fast growing company, plus typical earnings that are almost double the industry average, and compare it with your present situation, you will surely forgive us for saying this is a very special opportunity indeed.

Success has now created additional job opportunities in

LONDON and the SOUTH
The MIDLANDS, NORTHERN ENGLAND

for experienced and well accomplished salespeople.

Applicants must have significant past or present experience of selling for a major mainframe or minicomputer manufacturer, or perhaps a large scale bureau specialising in engineering or industrial applications, ideally with experience of the manufacturing industry. Above all they must have the proven ability to negotiate high value sales at board level within major companies and institutions.

In return we offer **on target earnings of £38,000** with a high minimum income guarantee for the first year of employment, plus a 2 litre company car and other fringe benefits including health insurance, penston, luncheon vouchers, etc.

Please contact Alasdair Scott (London) or Roger Dodd (Lichfield) quoting reference WSB/103. This is undoubtedly the best opportunity for advancing your career that is likely to be available for many months to come.

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SALES TRAINING, MARKET RESEARCH, RECRUITMENT

UNIVERSITY COLLEGE LONDON
and
LH FERMENTATION

Teaching Company Associate

SOFTWARE DEVELOPMENT

The Department of Chemical and Biochemical Engineering and LH Fermentation have a project, from the Science and Engineering Research Council and the Department of Trade and Industry, to design and develop software for the control and analysis of fermentation processes.

Approximately 80% of the Associate's time will be spent at LH Fermentation, and the post is expected to lead to an accelerated career development with the company at the end of the project.

Applications are invited from exceptional candidates, aged under 30, with a good honours degree in Computer Science or equivalent formal training. No knowledge of fermentation is necessary, but experience with FORTRAN 77 and real-time operating systems would be advantageous. As the post will lead to a position of responsibility within the company, in addition to software development skills, the candidate must be capable of good project management and demonstrate communicative skills. Salary commensurate with quality and experience will be up to £12,000.

Applicants should send a full curriculum vitae to: Dr N. M. Fish, Department of Chemical and Biochemical Engineering, University College London, Torrington Place, London WC1E 7JE. (6140)

THE SERVICES SOUND AND VISION CORPORATION

PROGRAMMER

To meet our expanding computer installation we have a vacancy for a PROGRAMMER. Experience of Honeywell TPS and Screen write is essential; Cobol and online system experience would be an advantage. Working conditions are excellent.

Salary from £7,000 p.a.

Applications in writing are invited from Programmers with at least two years previous experience.

COMPUTER OPERATOR

required in our DATA CENTRE

The Services Sound and Vision Corporation has an immediate vacancy for a Computer Operator at the Chalfont Grove Headquarters.
He/She will be responsible to the Operations Supervisor for the operation of twin Honeywell Level Six Mini Computers. Shift working is required for which an allowance will be paid. He/She must have a background in computing preferably on the operations side. Duties will include System set-up, run scheduling, supervision of peripheral equipment documentation and liaison with system and programming staff.

Salary c.£5,500 p.a. plus shift allowance

Applications in writing with details of previous experience to address below.
For both positions a good pension and life assurance scheme is available, free lunches are provided and assisted travel is available also. Pleasant working environment.

Apply to:
Mrs A. R. Sive, Personnel Supervisor
The Services Sound and Vision Corporation
Chalfont Grove, Gerrards Cross, Bucks. SL9 8TN (6098)

SALES BIT

Quality of Management – 70

Take emotions and politics out of the sale

A FEW weeks ago I attended one of those widely advertised one-day selling courses, presented by John Fenton of the Institute of Sales and Marketing. I suppose it was a bit like the *Sales Bit* column: nothing revolutionary, but worth the investment if only for the reminder.

We went through some good basic selling stuff about telephone prospecting, journey planning and a variety of other selling topics that must have been very familiar to those who have enjoyed at some time the luxury of formal sales training.

Eventually, we got around to discussing aspects of the decision-making process, and my ears pricked up when he used an unnamed Japanese computer company as an example of how the whole selling process can be carried out in the form of a recurrent cycle of sequential events.

What is important is the client's considered evaluation of his/her own priorities

Nothing new in that I hear you say; but the key elements into which it was divided were most interesting. But, more of that later.

Fenton had some interesting things to say about decision-making without actually getting involved in the deeper psychological aspects of the process. He promotes an evolutionary process based on what he calls "decision making units" which have the effect of breaking down the decision-making process into its essential elements.

Each individual element is rated by the customer, rather than the salesman, on a score out of 10 according to its importance rather than in any sequence of value relative to other elements. For example:

Price	7
Reliability	10
Emergency	5
Service	9
Quality	10
Uniqueness	2
Accessibility	6
Delivery	5

This is the client's considered evaluation of his own priorities rather than an accumulation of assumptions made by the salesman, and is therefore a much more reliable basis for establishing selling strategy.

Whilst it is obviously important for the salesman to know what is deemed to be most important within his process of selection, it does not necessarily mean that such knowledge makes him better equipped to close the sale. It may well be that the client's highest priority coincides with the supplier's greatest vulnerability.

If the prospect's most important consideration is delivery and the salesman's company is currently taking twice as long as the competition to ship their product, he may well have an insurmountable problem.

However, there is a bigger and more common problem within this scenario. It is the difference between the truth, and what the potential buyer perceives to be the truth. This can sometimes represent an enormous gap!

It is all very well the salesman knowing absolutely that the reliability of his product is unquestionably excellent, but if the word in the street suggests to the contrary, or if, due to some misunderstanding or misconception, the prospect believes that the salesman's product could possibly let him down, then all could be lost without the topic ever being discussed.

It is fair to say that the most difficult objections to overcome are those which are never mentioned. So, an excellent method for ensuring this kind of situation does not occur is to get the client not only to rate the relative importance of those factors affecting his purchase but also to rate, again with a score out of 10, his assessment of the supplier's capability related to those same factors.

Clearly, there is considerable merit in having a particular strength that coincides with a factor the buyer deems to be important. Conversely, there is little value in a supplier having a special capability in an area that the prospect considers to be unimportant.

For example, the buyer may rate the salesman's product and company as follows:

Price	10
Reliability	5
Emergency	6
Service	8
Quality	5
Uniqueness	2
Accessibility	8
Delivery	10

It is then a fairly simple matter to multiply both sets of scores together in order to arrive at what might be called a "suppliers rating":

Price	7 x 10 = 70
Reliability	10 x 5 = 50
Emergency	5 x 6 = 30
Service	9 x 8 = 72
Quality	10 x 5 = 50
Uniqueness	2 x 2 = 4
Accessibility	6 x 8 = 48
Delivery	5 x10 = 50
Total supplier rating	374

"So what?" you may ask. Well, first of all, you know the client's priorities and how your product measures up to them. Secondly, it

Sales people need to apply self – and prospect – analysis if they are going to ensure a high level of success

should be reasonably easy, particularly if you can recruit the buyer's assistance, to similarly rate your competitors and thus fairly accurately assess what you are up against. Thirdly, and particularly if you believe you have a relatively high rating, you can persuade the prospect to carry out a similarity rating of other suppliers for himself. This kind of objective analysis can overcome emotional and political obstacles.

I really do believe that sales people need to apply this kind of self – and prospect – analysis, particularly in the case of major business opportunities, if they wish to ensure a high level of selling success.

PUZZLE ANSWER

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